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An Investigation of Occupational Interest Fields of Special Class and Institution Retardates as a Function of Intelligence and Chronological Age

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AN INVESTIGATION OF OCCUPATIONAL INTEREST FIELDS OF SPECIAL CLASS AND INSTITUTION RETARDATES AS A FUNCTION OF INTELLIGENCE AND CHRONOLOGICAL AGE

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by

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J. A. T.

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CHAPTER I

THE PROBLEM AND DEFINITIONS OF TERMS USED

Growth of special education for the mentally retarded within the past decade is evidenced by the appearance of a multitude of publications and legislative acts. The fundamental objectives of these programs are the same as those formulated for all children by the Educational Policies Commission.[1] Attainment of the objectives of self-realization, human relationships, economic efficiency, and civic responsibility is an obligation resting with the school. As the school considers the retardate's individual needs and interests, these objectives can be realized.

The educational objectives of the mentally retarded child have been said to differ from those of all children only to the extent that they are narrowed down to prepare the individual to fulfill specific adjustments in a limited occupational and social sphere. In short, past experience has demonstrated that the retardate could achieve adjustments within his range of abilities; he could contribute his share

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[1]Educational Policies Commission, The Purposes of Education in American Democracy (Washington, D.C.: The National Educational Association, 1946), p. 189.

to the accomplishments of the tasks of life, and he could enjoy life at his own level of interest and accomplishment.[2]

As a consequence, leaders in the field saw a need for the school to prepare an individual to be as economically self-sufficient as possible.[3] In other words, an adequate vocational program for the retarded child was needed within the framework of the school system.

Today's trend, which requires the retardate to spend all or most of his educational life in some form of special class facilities, allows for his program to be planned over a period of year. Just as for all children, these years are thought of as a stage of transition from dependency to independency. Because of this basic assumption, particular emphasis during this transitory stage is given to the retardate's future role in the work-a-day world.

Special education programs, adhering to such a point of view, encompass the many components of vocational adjustment. One contributing factor to this adjustment is knowledge of occupational interests. Yet, it is common

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[2]Christine P. Ingram, Education of the Slow-Learning Child (New York: The Ronald Press Company, 1953), p. 61.

[3]Harry J. Baker, Introduction to Exceptional Children (New York: The Macmillan Company, 1944), p. 7.

knowledge that evidence concerning this fundamental area is weak and fragmentary. As a consequence, present concepts of the retardate's interests are based upon what adults believe to be interesting to the child rather than upon facts about the child's interests.[4]

One procedure which would provide some enlightenment in this area would be a study of inventoried occupational interests of educable mentally retarded boys in special classes and institutions. On the basis of this assumption the study appeared justified.

I. THE PROBLEM

Statement of the problem. It was the purpose of this investigation to examine the occupational interest fields of educable mentally retarded boys in special classes and in institutions with respect to intelligence and chronological age.

Sub-problems. More specifically this study was concerned with determining the following:

1. The differences in occupational interest fields as a function of intelligence using: first, educable

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[4]Joseph Lavender, "The Vocational Realism of Mentally Retarded Boys in the Bronx New York" (unpublished Doctoral dissertation, Columbia University, New York, 1957), p. 9.

mentally retarded boys in special classes; and second, educable mentally retarded boys in institutions.

2. The differences in occupational interest fields as a function of chronological age using: first, educable mentally retarded boys in special classes; and second, educable mentally retarded boys in institutions.

Importance of the study. Acceptance of basic educational objectives for the mentally handicapped resulted in the emergence of dynamic programs which require the retardate to spend the greatest part of his educational life in special class facilities. Here the program was designed to aid the individual to become a productive member of society. This not only necessitated more planning for the retardate over the years, but also required research investigation to substantiate existing practices. Yet, a comprehensive appraisal by Kirk indicated much of the available work has been the by-product of studies in the disciplines of psychology and education and not the result of efforts from within the field of special education itself.[5]

Psychological investigators discovered that a contributing factor to occupational success, or lack of

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[5]Samuel A. Kirk, "Needed Projects and Research in Special Education," National Society for the Study of Education, Forty-ninth Yearbook, Part II, The Education of Exceptional Children (Chicago: The University of Chicago Press, 1950), p. 320.

success, was knowledge of the activities which the person found interesting. The significance of such knowledge was incalculable. Emerging from these principles of importance was the realization that occupational interests were not solely for evaluative purposes but also for guidance.[6]

Authorities in educational measurement and differential psychology acknowledged the foregoing; yet both freely admitted that occupational interests have received less attention from them during the last generation than any other human characteristic. With the exception of vocational psychologists, both groups have tended to concentrate their energies upon the measurement of intelligence, the diagnosis of mental malfunctioning, the organization of personality, and the discovery and isolation of abilities.[7]

In light of the situation described, it is not at all surprising that a number of recent studies uncovered

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[6]Arthur M. Jordon, Measurement in Education (New York: McGraw-Hill Book Company, Inc., 1953), p. 423.

[7]Jacob Wrightstone, Joseph Justman, and Erving Robins, Evaluation in Modern Education (New York: American Book Company, 1956), p. 302; Donald E. Super, Appraising Vocational Fitness by Means of Psychological Tests (New York: Harper and Brothers, 1949), p. 376.

very little research related to the occupational interests of the mentally retarded.[8]

Thus, a schism scars our present state of knowledge. A void has been created. An educational point of view emphasizing occupational preparation and adjustment exists amidst a lack of psychological data concerning the measurement of occupational interests.

The foregoing statements summarize the justification for this study. It was hoped that this investigation would shed at least some small light upon a relatively unexplored area.

II. DEFINITIONS OF TERMS USED

The definition of some of the terms that were used throughout the study should be of value in further visualizing and understanding the nature of the investigation. The definitions follow:

Educable mentally retarded. For the purpose of this investigation the term "educable mentally retarded" shall

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[8] Lavender, loc. cit.; Robert Erdman, "Vocational Choices of Adolescent Mentally Retarded Boys" (Unpublished Doctoral Dissertation, the University of Illinois, Urbana, 1957); and Louise Fligler, "A Study of Expressed Interests of Mentally Retarded" (Unpublished Doctoral Dissertation, Columbia University, New York City, 1954).

designate boys between the chronological age of eleven through sixteen; enrolled in a special class; or institutionalized; and with an intelligence quotient between fifty and eighty-five, as measured by an individual psychometric examination.

Mentally retarded, retardate, and mentally handicapped. Within the confines of this investigation the terms "mentally retarded," "retardate," and "mentally handicapped" were considered to be synonymous with "educable mentally retarded." These terms were used interchangeably throughout the study.

A special class. For the purpose of this study the term "a special class" meant a grouping of retarded boys of different academic levels, located in the Individual Progress Department of Bancroft School, and under the primary direction of one teacher.

Institution. Throughout the report of this investigation the term "institution" meant either the Beatrice State Home or the Glenwood State School, both of which care for the mentally retarded who are committed to their jurisdiction for various reasons.

Vocation and occupation. The word "vocation" was interpreted as meaning a job or type of work at which an

individual could be employed and by which he could earn his livelihood. For the purpose of the study "occupation" was considered to be synonymous with "vocation," and both terms were employed interchangeably throughout the study.

Occupational interests. The term "occupational interests" was construed as meaning the summarized results of systematic appraisals designed to reveal the degree of the individual's desired patterns, areas, or fields, of vocational activities.

Occupational interest fields. Throughout this report the term "occupational interest fields" meant the broad categories into which jobs are classified by the Picture Interest Inventory.

CHAPTER II

HISTORICAL BACKGROUND

An investigation concerning the occupational interests of the mentally retarded, through its unique nature, transcends the arbitrary boundaries of both psychology and education. Hence, any attempt to carry on an investigation in the area requires a brief acquaintance with the predominant historical reflections of each discipline.

I. THE HISTORICAL DEVELOPMENT OF INTERESTS

Historically, psychologists have long regarded interests as a subjective aspect of human experience. Their discussions prior to the early experimental period, according to Fryer, evolved principally about the dominant psychological theories of the day, structuralism and functionalism.[1] The structuralists viewed interests analysis from the standpoint of the individual psychological factors which composed it, while the functionalists concerned themselves with the dynamic or motivational aspects of the problem.

To the structuralist, interests and aversions were made up of immediate and remembered impressions caused by

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[1]Douglas Fryer, The Measurement of Interests (New York: Henry Holt and Company, 1931), p. 462.

stimulation of the sense organs; furthermore, they held that these experiences contained the essential element of pleasant or unpleasant feeling accompaniments. By demonstrating that some experiences did not possess pleasant or unpleasant components, they supported their contention that all experiences were not aversions or interests.

In addition, these men advanced the view that interests, developing genetically, passed through three stages: primary, secondary, and primary derived. Each stage represented a different level of complexity in the process. The primary level, which was determined by a stimulus such as bright or moving objects and loud or repeated sounds, compelled interest. Since these were the so-called biologically adequate interests determiners, they defined the experiences of the young child and lower forms of life. The secondary level, on the other hand, was a stage of conflict. Here, two or more interests were claiming ascendancy as they operated under distractions and difficulties. This transitory stage occurred between the primary and the primary derived level of interest. The third level, primary derived, represented the educational or vocational interests within the chosen field of the individual. At this stage conflicts had vanished, and interests of the socio-economic life of the individual had enveloped his attention in their own right.[2]

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[2] Ibid., p. 461.

Voicing the opinion that experiences never stand still, the functional psychologists unleashed vehement criticism of the structuralists' views. To the functionalist, interest, through its "volitional factor," was continuously moving forward in development. Interest was more than a pleasant thought; it was a train of pleasant thoughts, it was dynamic. While essentially a feeling experience, interest was a developing experience that would strive toward an eventual end result. Therefore, the functionalists viewed interest along side of the physiological drives; in short, they looked upon it as a motivating force in the individual's development.[3]

Amidst the background of the age-old conflict, early educators and industrialists ignored the importance of interests in life. However, emerging as part of the dynamic nineteenth century civilization came a growing recognition of the human as an individual--one who was not only capable of satisfactions but possessed a right to such gratifications, including interest in his own activities.

This concept was soon to infiltrate the newly-evolving industrial and educational theories. One of the early theories of educational training based upon interest was formulated by Johann F. Herbart. To him, the purpose

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[3]Ibid., p. 462.

of education was to stimulate the spontaneous interest forces existing within the individual by directing him toward many and varied objects. Following Herbart, most of the newly conceived educational methods emphasized the stimulation of interests.[4]

The educational theories of G. Stanley Hall, John Dewey, and E. L. Thorndike served to further emphasize the important aspects of utilizing interests in educational training. The profound utterances of these mental giants exposed interests as being essentially utilitarian, attached to a goal idea, an aid to learning, and many sided in its expression.[5]

Thus, at the dawn of the twentieth century, interests had been elevated to an important place in the educational doctrines of all educators. Interests became the mainspring upon which the acquisition of knowledge and development rested.

In early industry there appeared little consciousness of interests as a factor in the workers' happiness and productivity. However, efforts to humanize the industrial

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[4]Ibid., p. 444.

[5]Ibid., p. 446.

tasks and the upheaval of scientific management soon indicated the significance of the role of interests to the industrialists. Thus, at the advent of the age of measurement, many industrial segments were poised to accept the concept of human efficiency, a concept which encompassed recognition of the individual worker as an interested person.

Upon the arrival of the age of measurement, evaluative instruments of interests were introduced, and newly acquired knowledge began to appear in the fields of industry and education. Theoretical statements of the past were no longer unquestioningly accepted nor made the sole stimulant for growth and development.

At this period in history, interests were coming to be known by the techniques or instruments employed in their discovery. The three predominant methods of determining an individual's interests were expressed interests, manifest interests, and inventoried interests. A person's expressed vocational interest was indicated by the occupation in which he professed a desire to be employed. Manifest vocational interest was indicated by the occupation in which he was engaged or preparing to enter.[/] Inventoried vocational interest was determined by presenting the

individual with a long list of activities and then asking him whether he liked, disliked, or was indifferent about each.[6]

Early investigations of interests relied upon the expressed interests technique; however, analysis of the vast array of gathered data revealed that this procedure often produced unreliable results. For this reason, those concerned with the determination of interests recognized the need for a more indirect approach. As a result, a graduate seminar on interests was conducted at the Carnegie Institute of Technology during the academic year 1919-1920. The principal contribution of the Carnegie group was the launching of the standardized interest inventory. The inventories devised by the Carnegie participants introduced two new procedural innovations: (1) the items dealt with the subjects' liking or disliking for a large number of specific activities, objects, or types of persons commonly encountered in daily living; and (2) the responses were empirically keyed for the different occupations.[7]

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[6]Robert M. W. Travers, Educational Measurement (New York: The Macmillan Company, 1955), p. 287.

[7]Anne Anastasi, Psychological Testing (New York: The Macmillan Company, 1954), p. 566.

Several inventories were prepared as a consequence of the work started by their authors during the seminar. The one whose development has been carried furthest is the Vocational Interest Blank, which was constructed by E. K. Strong. Unlike others of these early inventories this instrument has undergone continued research and revision.

A most significant contribution in the field, as a result of the efforts by Strong and his students, was the discovery of occupational differences in patterns of interests.[8] These investigators found that persons engaged in different occupations were characterized by common interests, which differentiated them from individuals engaged in other occupations. It was further discovered that these interests extended not only into the job activities, but also to hobbies, sports, types of books, social activities, and other facets of daily life. Thus, it proved feasible to question individuals about their interests in familiar things, and thereby determine how closely their interests resembled those of persons successfully engaged in different occupations.[9]

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[8]Donald E. Super, Appraising Vocational Fitness (New York: Harper and Brothers, Publishers, 1949), p. 445.

[9]Anastasi, loc. cit.

Another inventoried interest test, the Kuder Preference Record, appeared on the measurement scene during the late thirties. The initial work with this instrument was started by Kuder at Ohio State University, and after several years of experimentation was published. Since its first publication it has been revised, and new studies by its author and others have appeared rather frequently in the journals or in new editions of the manual.

Developed more recently than the Vocational Interests Inventory, the Kuder Preference Record followed a different approach in the selection and the scoring of its items. Its major purpose was to indicate interests in a relatively small number of broad occupational areas rather than in specific occupations. The items were originally formulated and grouped on the basis of logical validity. This was followed by employment of extensive item analysis which was "aimed at the development of item groups showing high internal consistency and low correlation with other groups."[10]

During the ensuing years, Super reported, that a heavy concentration of effort on the part of vocational psychologists has accounted for a number of widely used or new and well publicized instruments. Furthermore, concerted effort has produced an increased amount of new data in the

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[10]Anastasi, op. cit., p. 571.

area of occupational interests. Thus, a few scholarly books and a significant number of monographs and journal reviews dealing with the nature and role of occupational interests have made their appearance on the contemporary scene.[11]

At the same time, other differential psychologists were concentrating their efforts on various other areas and types of characteristics. The results, as viewed by Wrightstone, depicted the major emphasis in interest measurement on vocational guidance, while the field remained relatively unexplored for classroom and educational guidance.[12]

II. HISTORICAL DEVELOPMENT OF SPECIAL EDUCATION FOR THE MENTALLY RETARDED

The accidental discovery of the French "Wolfboy" during the later part of the nineteenth century facilitated the systematic and scientific development of education for the mentally handicapped. The boy's appearance before the Academy of Science in Paris not only aroused much interest, but also prompted the psychiatric assertion that the child was an idiot and incapable of being taught.[13]

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[11]Super, op. cit., p. 376.

[12]Wayne J. Wrightstone, Joseph Justman, and Irving Robins, Evaluation in Modern Education (New York: American Book Company, 1956), p. 302.

[13]J. E. Wallace Wallin, Education of Mentally Handicapped Children (New York: Harper and Brothers, Publishers, 1955), p. 7.

A disbeliever of this pronouncement, Jean Maro Gaspard Itard, came forth with the contention that the boy was merely wild and untaught. He further maintained that the proper application of varied stimuli to the nervous system would greatly improve the boy's adjustment. Itard predicted that normality would emerge as this boy's educational program was supplemented by impressions of new ideas, imitative speech development, and human wants and desires. Thus, a carefully devised plan of sensory discrimination was followed as Itard endeavored to restore the "wolfboy" to normality.[14]

Several years of persistent ingenuity, sagacity, courage, and patient effort finally brought a confession of failure from Itard. However, wide acclaim by his contemporaries awaited him for his original contributions to scientific education. Not only did this man produce evidence which suggested that even a low-grade imbecile could be somewhat improved through proper training, but he was perhaps the first educator to apply clinical methods to the study and observation of a pupil.[15]

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[14] Ibid.

[15] Ibid.

Elaborating upon and modifying Itard's methods, Edward Sequin attempted to train people of low mentality by employing the physiological or the sensori-motor method. He proposed to develop the imperfect sense organs of the mentally defectives through sensori-motor training or exercise. Coupled with his mechanistic approach was a philosophy which emphasized the education of the whole child, the individualization of instruction, the importance of rapport between teacher and pupil, the physical comfort of the child during the learning period, and the importance of beginning with the child's needs, wants, and desires. So successful were Sequin's efforts that many proclaimed him the practical founder of the modern era in the study of mentally retarded children.[16]

A disciple of Itard and Sequin, Dr. Maria Montessori, concluded that the problem of mental retardation was a pedagogical one rather than one for medicine. To demonstrate the practicality of this view, she organized a school for the twofold purpose of educating the retarded and training their teachers. Within the confines of her program she devised methods for improving sensory and perceptual discrimination. These methods, as described by Wallin, were

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[16]Samuel A. Kirk and G. Orville Johnson, Educating the Retarded Child (New York: Houghton Mifflin Company, 1951), p. 78.

largely refinements and improvements on the sensori-motor practices of her pioneering predecessors.[17]

The fruitful results of these methods in teaching the retarded once more ignited the spirit of scientific inquiry in Dr. Montessori. The desire to test her developed techniques in the educational program of the normal preschool child brought an abdication from her position of leadership in the field of mental deficiency.[18]

Another of the early contributors to the study of the mentally retarded was O. Decroly, a Belgian physician, who was confronted with the problem of treating the mentally handicapped. Like others who were active in the field, he felt that a sound educational program was the most effective treatment. With this in mind he devised a program which evolved around the child's mental and physical constitution. In other words, Decroly advocated that the education of the retardate, while aimed primarily at sense and muscle training, must center around the child and his needs.[19]

Special education for the mentally retarded continued its dynamic tempo following the First World War.

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[17]Wallin, op. cit., p. 9.

[18]Ibid.

[19]Kirk and Johnson, op. cit., p. 92.

Alice Descoeudres, Decroly's apprentice, extended and implemented his techniques during the early twenties. The following quotation indicated her importance in the historical panorama of the developing educational program for the retardate:

> . . . her distinct contribution for modern teaching involves rather ingenious psychological explanations of difficulties which mentally handicapped children encounter in learning, and games and activities which she devised to utilize the child's desires and experiences in developing the educative process. In Descoeudres' system we find a combination of formal exercises and modern philosophy of teaching through experiences.[20] p.92

As the era of sensori-motor training dissipated, there emerged a period in which a simplified version of elementary curriculum of the time was adapted for the mentally retarded. Needless to say, Inskeep's "watered-down curriculum" approach was frowned upon by many specialists in the field of education for the mentally retarded.[21]

At about the same time, the activity method was gaining attention throughout the field of education. It was not surprising to find J. E. Wallace Wallin and Christine Ingram encouraging the utilization of the unit or

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[20] Ibid.

[21] Ibid.

project method in special classes. Both advocated in their writings a unit concept that envisioned the development of experiences based upon the needs, interests, and abilities of the mentally handicapped.[22]

Throughout the nation educators of the mentally retarded had to choose between the "watered-down curriculum" and the project approach. Historical reports indicated that in practice most of these employed not the unit plan but, instead, the "watered-down curriculum" methodology. However, advocates of both points of view still flourish within the educational milieu.[23]

Not all engaged in the educational movement for the retarded followed either the "watered-down curriculum" or the unit plan of instruction. Some practiced the methods growing out of the educational philosophy advocated by John Duncan. Seeing weakness in the instructional practices of the past, Duncan advocated more of an eclectic approach. He contended that much of success attributed to the unit plan did not indicate its superiority over the subject matter plan. He believed that features of the unit plan ". . . can be embodied in a Subject Method to obtain, not just as good, but better results."[24]

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[22] Ibid., p. 93.

[23] Ibid.

[24] John Duncan, The Education of the Ordinary Child (New York: The Ronald Press Company, 1943), p. 30.

The basis for Duncan's theory appeared to be the concept of intelligence developed by Spearman and his followers. Duncan felt that general or abstract intelligence could be measured by verbal intelligence tests. On the other hand, specific or concrete intelligence could be measured by the performance type of examinations.[25]

Duncan's investigations appeared to substantiate his theory. As a consequence, he concluded that the mentally handicapped had better intelligence in the concrete field than in the abstract or verbal field. This, in turn, suggested handwork and crafts as the primary vehicle for curriculum development. Recognizing that working with the hands alone would not, in itself, prove entirely satisfactory for the retardate, Duncan held that these manual activities be planned in such a way that the retardate could observe relationships. Handwork and crafts were a means of education. They were employed as a means for

> . . . the stimulation of thought, the intellectual activity in solving visual and concrete problems--that came first, followed by the arrangement of exercises into steps and stages to form a graded scheme.[26]

Another segment of educators of the mentally handicapped believed that since the retardate could not achieve

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[25] Ibid.

[26] Ibid., p. 67.

to any appreciable degree in the academic subjects, the best program was some sort of occupational or vocational training class. In many parts of the nation, therefore, the mentally handicapped were actually sent to regular vocational schools. Very soon it was discovered that a certain degree of academic training was necessary for success in the activities of the vocational program.[27]

The occurrence of this dilemma initiated investigations by Channing and others. These revealed that the occupations which the mentally handicapped secured and held were mostly of the unskilled and semi-skilled types, requiring little or no academic or specific vocational training. In addition, the studies tended to indicate that the retardates were in need of habits and attitudes of work, which would prove beneficial to them in their work-a-day life, rather than specific vocational training.[28] The stage was set for the emergence of the most recent point of view concerning the education of the mentally retarded.

In the industrialized areas of the nation, teachers of the mentally handicapped began to think of occupational

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[27] Ibid.

[28] Alice Channing, Employment of Mentally Deficient Boys and Girls, United States Department of Labor, Children's Bureau Publication M, No. 210, 1932 (Washington, D. C.: United States Government Printing Office), p. 67.

education for the retarded. By the early forties, lists of occupations suitable for the retarded had been compiled in such cities as Detroit and New York. These were to serve as the basis upon which teachers were to develop projects and activities.[29]

From this meager beginning the neophyte term "occupational education" has rapidly gained prominence in the field of special education for the retarded. A contributing factor to this phenomenon has been the concerted efforts of Richard Hungerford and his followers, who have broadened the concept of occupational education to mean that:

> The whole program for the mentally retarded must be built around the achieving of vocational and social competence, for here, if anywhere, the retarded will most nearly approach normalcy. This different developmental program is called Occupational Education.[30]

The techniques and objectives of implementing an effective program of occupational education were set down in a number of articles appearing in Occupational Education, a

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[29]Marcella E. Douglas, "Some Concrete Contributions to Occupational Education in the Academic Classroom," American Journal of Mental Deficiency, XLVIII, Number 3 (January, 1944), pp. 288-291.

[30]Richard H. Hungerford, Chris J. DeProspo, and Louise E. Rosenzwieg, "The Non-Academic Pupil," Philosophy of Occupational Education (New York: The Association for the New York City Teachers of Special Education, 1948), p. 17.

magazine for those interested in the guidance of non-academic pupils. This program was designed around a core of interests in the five major areas of: (1) occupational information, (2) vocational guidance, (3) vocational training, (4) vocational placement, and (5) social placement. Its basic philosophy appeared to center about the belief that the retarded have a contribution to make to society and that society has a responsibility to develop their potential so that this contribution can be made.

In short, occupational education attempts to organize a program for the retarded which will mesh with their abilities and interests and which will emphasize the goals of occupational adequacy and social competence.[31]

HISTORICAL SUMMARY

The theoretical definitions of interests, prior to the early experimental period in psychology, evolved primarily about the two dominant psychological schools of the era. While the structuralists viewed interest analysis from the standpoint of the individual psychological factors

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[31]Samuel A. Kirk, "Needed Projects and Research in Special Education," The Forty-Ninth Yearbook of the National Society for the Study of Education, Part II. The Education of Exceptional Children (Chicago, Illinois: The University of Chicago Press, 1950), p. 105.

which comprised it, the functionalists concerned themselves with its motivational aspects. However, the advent of the age of measurement in psychology brought about some new and different distinctions.

As measurements of interests were introduced into education and industry, an individual's stated position was no longer accepted on the basis of theory alone. Interests were now coming to be known as what the tests or inventories measured. In short, interests came to be distinguished on the basis of the method employed in their determination: expressed, manifest, or inventoried.

Early investigations relied on expressed interests; however, the ensuing research demonstrated it was more worth while to focus on inventoried interests, which had their inception at the Carnegie Graduate Seminar on interest in 1920.

The most noteworthy inventory growing out of this seminar was the Strong Vocational Interest Blank. Based upon the approach of occupational differences in patterns of interests, it succeeded in establishing the fact that inventoried interests of men engaged in different occupations differ significantly from those of men in general. In addition, for more than thirty years it has been subjected to a number of intensive studies, while its author assumed the responsibility for integrating and interpreting the relevant research results.

A second noteworthy inventory, the Kuder Preference Record, attacked the problem through a different approach in the selection and scoring of items. Its major aim was to indicate relative interests in a small number of broad occupational areas.

While the growth of these and other inventories in the area of interest measurement has stimulated exploratory efforts in the ranks of the vocational psychologists, other differential psychologists have concentrated the efforts of their investigations on other types of human characteristics. As a consequence, there has been a rapid accumulation of data in the area of vocational interests for industrial use; but the field remains relatively unexplored for the purpose of educational and classroom guidance.

The nineteenth century marked the advent of education for the mentally handicapped children. Since early educators delegated their responsibility for the development of educational methodology and techniques of the retardate to the medical profession, most of the field's major contributors were European physicians. Spurred by the social philosophy of the time and their belief in the potentialities of the human being, these men of inquiry were willing to delve into the unknown in order to discover ways of educating those previously deemed incapable of profiting from education.

Based upon the belief that man obtains his knowledge and mental ability through the sensory processes, sensationalism had its influence on the educational techniques of the retarded. Early education for the mentally handicapped was primarily aimed at sense and muscle training. The dawn of the twentieth century saw the first break away from this type of education and a leaning toward the point of view of learning through experiences.

Throughout the twentieth century, methods for educating the mentally retarded child have been developed by numerous individuals. A few examples include: (1) Descoeudres's sense training, with an attempt to develop the tool subjects through concrete activities; (2) Inskeep's emphasis on "watering-down" the elementary curriculum; (3) Ingram's emphasis on education through unit experiences; (4) Duncan's emphasis on handwork and crafts, correlated with the tool subjects through a systematic method of presentation; and (5) Hungerford's emphasis on occupational information, guidance and training, and social competence through a core program. However, it must be pointed out that interwoven into all of these individuals' techniques were the common components of adapting the instruction to the ability of the child and of making the program less academic and more practical.

CHAPTER III

REVIEW OF RELATED LITERATURE

The problem under consideration failed to lend itself to easy classification; this necessitated a comprehensive survey of pertinent topical subdivisions in psychology and education. The survey revealed a dearth of systematic * attempts to study the inventoried interests of retardates; however, investigations employing other measurement techniques were found. A brief summary of the work done on problems related to the one at hand follows.

I. EXPRESSED INTERESTS

Play Interests of Retardates

An early interest investigation compared the play activities of the mentally superior and mentally handicapped. Its findings depicted retarded children preferring games involving others, but avoiding activities entailing the use of reading.[1]

Fliegler reported two studies: the Chicago study, by Schlotter and Svendsen, concluded that games involving action

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[1]Harvey C. Lehman and Paul Witty, The Psychology of Play Activities (New York: A. S. Barnes and Company, 1927), p. 222.

were as popular with retardates as with normal children; the other study, Blair's investigation, found a group of mentally inferior high school students participating in athletics more frequently than a group of superior students.[2]

Academic Interests

Several comparative studies were concerned with academic interests of retardates. Blair, in a study of subject preferences, found retarded boys liked shop, and the girls like home economics best. In addition, both preferred history and social studies but disliked science.[3] An investigation in 1940 indicated the retardate was less interested than the superior child in music, dramatics, and reading.[4] Schmidt observed that reading interest patterns

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[2]B. Schlotter and M. Svendsen, "An Experiment in Recreation with the Mentally Retarded," (Chicago: Behavior Research Fund, 1932), p. 75; and Glenn Meyers Blair, "Mentally Superior and Inferior Children of Junior and Senior High School Age" (unpublished Doctoral disseration, Columbia University, Teachers College, New York, 1938), p. 61, cited by Louis Arron Fliegler, "A Study of Expressed Interests of Mentally Retarded" (unpublished Doctoral dissertation, New York University, New York City, 1954), p. 14.

[3]Glenn Meyers Blair, "Subject Preferences of Mentally Superior and Inferior High School Students," Journal of Educational Research (October, 1939), p. 89.

[4]Daryton W. Lewis and William McGehee, "Comparison of the Interests of Mentally Retarded," School and Society, LII (December, 1940), p. 597.

of retarded girls closely paralleled those of average girls their age except for the less frequent occurrence of boys' adventure stories, stories of the Bible, and poetry.[5] Later, Kuhlen reported the reading interests of bright children to be more realistic and superior in quality than those of dull children.[6]

In 1954, Fliegler compared the expressed interests of institutional and special class students. He found that (1) as retardates matured chronologically, their interests for academic subjects decreased; (2) institutional children found their school subjects less abhorrent than special class students; and (3) older institutional children preferred their studies more than younger institutional children.[7]

Vocational Aspirations and Attitudes

A number of investigators delved into the vocational aspirations and attitudes of the mentally handicapped. Witty

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[5]B. Schmidt, "Reading Habits and Interests of Mentally Retarded Girls," Elementary English Review, XIX (December, 1942), pp. 273-281.

[6]R. G. Kuhlen, Psychology and Adolescent Development, (New York: Harper and Brothers, 1951), p. 220.

[7]Louis A. Fliegler, "A Study of Expressed Interests of Mentally Retarded" (unpublished Doctoral dissertation, New York University, New York City, 1954), p. 85.

and Lehman studied the relationships between vocational attitude and intelligence. They found the vocational choices of the dull boys they studied to be somewhat indiscriminately and markedly immature.[8]

A more recent investigation of interests and attitudes of a normal and a retarded group with different C.A.'s but of equal M.A.'s was conducted by Sloan and Raskin. It indicated the adult retardate to be more mature than the normal child in ego identification, level of aspiration, vocational choice, fears, wishes, and practicality. On the basis of this they concluded that (1) the retardate possessed insight into his limited potentiality in the choice of a vocation; and (2) he could be expected to make a better adjustment than the normal child of similar mental age.[9]

A Doctoral dissertation in 1957 delved into the vocational realism of 167 boys in special classes in the Bronx New York. To accomplish this Lavender employed a logically developed vocational realism rating scale. Analysis of the expressed vocational choices revealed fifty-eight per cent of the response to be unrealistic--falling in the

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[8]Paul A. Witty and Harvey C. Lehman, "Vocational Attitude and Intelligence," Elementary School Journal, Volume 31 (June, 1931), p. 744.

[9]William Sloan and Allen Raskin, "A Study of Certain Concepts in High Grade Mental Defectives," American Journal of Mental Deficiency, LVI (January, 1952), pp. 638-642.

professional and skilled occupational levels. However, a comparison with children of average intelligence and similar chronological age revealed that (1) the retardate picked lower level occupations more frequently and (2) he rejected the professional and managerial areas more consistently.[10]

Fliegler's dissertation dealt with the expressed interests of the special class and institutional retardate. The general and specific interests of these 1,027 youngsters were determined through use of an altered form of the Springfield Interest Finder. Individually administered, the responses were analyzed and statistically treated to calculate significant differences for chronological age, sex, race, mental level, and socio-economic level. In the area of vocational aspirations his findings revealed that (1) professional occupations were chosen by younger children more frequently than older children; (2) older boys generally selected semi-professional occupations more than older girls; (3) adolescent boys preferred semi-professional occupations more frequently than younger boys; (4) managerial and sales occupations were rarely referred to by the retardates; (5) clerical vocations were chosen more frequently by girls than boys; (6) older children were more interested in clerical vocations than younger children; (7) service

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[10]Joseph Lavender, "The Vocational Realism of Mentally Retarded Boys in the Bronx New York," (unpublished Doctoral dissertation, Columbia University, New York, 1957), pp. 55-59.

jobs were selected more frequently by the younger children; (8) boys expressed more frequent interests in skilled and semi-skilled vocations; (9) adolescent boys more than younger boys were interested in skilled and semi-skilled occupations; and (10) as institutional boys matured they showed a decline in selecting the skilled and semi-skilled occupations.[11]

In general, Fliegler's investigation substantiated his conclusions that of all the variables compared, chronological age had the most significant effect upon the retardate's interest patterns. Sex differences had the second most important influence, while race and mental level had no consistent effects upon interest patterns. In addition, socio-economic level appeared to bear no relationship to the interests expressed by these retardates.[12]

During the same year, Erdman investigated the vocational choices of 106 boys enrolled in special classes in six major labor markets. Vocational choice and some of the factors effecting it were securing through a direct interview with each boy and his teacher. Data analysis revealed occupations at the unskilled or semi-skilled levels chosen by fifty-two per cent of the boys, while another thirty-four per cent chose skilled jobs. Of the remainder, one per cent preferred professional vocations; the others could not make

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[11]Fliegler, loc. cit.

[12]Ibid.

a choice. As for the variables affecting these choices, Erdman concluded that many of the boys would have preferred high level occupations but recognized their lack of academic ability for such endeavors. Furthermore, he surmised that vocational experiences associated with the home and the community exerted a stronger influence on the formation and crystallization of vocational choices than did the school experiences of the retardates.[13]

II. MANIFEST INTERESTS

Job Levels

Others attacked the problem of vocational interests by attempting to determine the job level at which retardates were employed. Keys and Nathan took 2,775 jobs revealed by such studies and employed the Simm's Scale to classify them. Table I on the following page extracts the pertinent data from their report and indicates the majority of retardates were employed in the semi-skilled and unskilled occupational levels.[14]

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[13]Robert Lee Erdman, "Vocational Choices of Adolescent Mentally Retarded Boys" (unpublished Doctoral dissertation, the University of Illinois, Urbana, Illinois, 1957).

[14]Noel Keys and Jannette Nathan, "Occupations for the Mentally Handicapped," Journal of Applied Psychology, XVI (October, 1932), p. 497.

TABLE I

A SUMMARY OF KEY'S AND NATHAN'S INVESTIGATION OF JOB LEVELS AT WHICH RETARDATES WERE EMPLOYED

Occupational Group	Percentages		Total Averages
	Males	Females	
Professional	0	0	0
Semi-Professional (Managerial and Commercial)	0	0	0
Small Shop or Farm Owner, Foreman, Clerks, etc.	1.1	2.7	1.9
Semi-Skilled Laborers	11.2	4.8	8.0
Unskilled Laborers	79.5	84.4	82.0
Unspecified Employment	8.2	8.1	8.1

The same year Channing conducted a study concerning the kinds of employment engaged in by 1,067 boys and girls previously enrolled in special classes of seven major cities. She concluded:

> The occupations in which the boys and girls found employment were largely of the unskilled and semi-skilled types, requiring little if any industrial training or academic education. . . . Only a few boys had been successful in learning a skilled trade, a few others had attempted or still were trying to learn a trade.[15]

Channing estimated about three-fifths of the jobs studied to be in the manufacturing and mechanical industries. The majority of boys in these two occupational groups were employed as laborers, helpers, and semi-skilled operatives. Other jobs held by retardates but not included in the previous categories were truck drivers, helpers to truck drivers, delivery men, stock boys, newsboys, actors, waiters, counter boys, household servants, and errand boys.[16]

Marten's study encompassed former special class pupils in forty-three cities. Her findings, which indicated that less than one per cent of these people were engaged in

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[15]Alice Channing, "Employment of Mentally Deficient Boys and Girls," United States Department of Labor, Children's Bureau Publication #210 (Washington, D. C.: Government Printing Office, 1932), p. 67.

[16]Ibid.

occupations above the skilled types, were similar to Channing's.[17]

An informal survey to determine how many of 302 former special class pupils of the Detroit public schools were employed and the level at which they were employed was cited in a dissertation by Erdman. He reported sixty-four per cent doing unskilled work, thirty-five per cent working in the semi-skilled areas, and approximately one per cent engaged in skilled work.[18]

Kennedy studied the social adjustments of non-morons as compared to morons. Part of this investigation dealt with the types of jobs in which these individuals were engaged. His classification of these jobs, according to the Dictionary of Occupational Titles, revealed fewer morons than non-morons employed in the highest kinds of vocations: professional, semi-professional, and managerial. In addition, fewer morons than non-morons were employed in clerical and sales work, and approximately twice as many morons as

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[17]Elise H. Martens, Occupational Experiences for Handicapped Adolescents in Day Schools, United States Department of Education, Bulletin Number 30, 1937 (Washington, D. C.: Government Printing Office, 1938), p. 61.

[18]Paul Volker, "Unpublished Studies from Annual Reports of the Detroit Board of Education," cited by Robert Lee Erdman, "Vocational Choices of Adolescent Mentally Retarded Boys" (unpublished Doctoral dissertation, The University of Illinois, Urbana, 1957), p. 6.

non-morons were employed in domestic services. Almost an equal proportion of each group was engaged in agricultural work, while laboring occupations were found to attract more morons than non-morons.[19]

In 1953, a follow-up study of a group of mental retardates found them employed on such jobs as construction laborers, truckers, cement finishers, janitors, and so forth. However, a few were discovered working in such vocations as a manager of a business, an auto dealer, and a bookkeeper.[20]

De Michael reported on the vocational rehabilitation of 531 retarded individuals. In general, his results paralleled those of the previously cited investigations.[21]

Another study concerning the economic adjustment of 121 mentally handicapped persons formerly enrolled in the Detroit special classes was conducted by Bobroff. His

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[19]Ruby Jo Kennedy, "The Social Adjustment of Morons in a Connecticut City, Mansfield Training Schools" (Social Service Department, State Office Building, 1948), pp. 46-49.

[20]Don C. Charles, "Ability and Accomplishments of Persons Earlier Judged Mentally Deficient," Genetic Psychological Monographs, LIII (February, 1953), pp. 3-71.

[21]Salvatore Di Michael, "Vocational Rehabilitation of the Mentally Retarded" (Rehabilitation Service Series No. 123, Washington, D. C.: United States Government Printing Office, 1950).

findings not only agreed with those of earlier researchers, but were also substantiated by results of more recent investigations concerning manifest occupational interests of retardates.[22]

The literature revealed several reports of attempts to determine the intelligence of persons employed in various vocational groups. One of the earliest of these was carried out by Clark and Gist. After obtaining the intelligence quotients made by high school students twelve years prior to their investigation, they conducted a follow-up study to determine the type of occupations each person entered. A "high positive" relationship was found to exist between the intelligence quotient and the type of jobs at which these people were employed. For example, those of 115 I.Q. and above were usually employed as professional, clerical, and sales people. Those having I.Q.'s below 75 were most frequently engaged in tasks at the unskilled and semi-skilled levels.[23]

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[22]Allen Bobroff, "Economic Adjustment of 121 Adults, Formerly Students in Classes for Mental Retardates," American Journal of Mental Deficiency, LX (January, 1956), pp. 525-535.

[23]Carroll Clark and Noel Gist, "Intelligence as a Factor in Occupational Choices," American Sociological Review II (October, 1938), pp. 683-694.

Occupational Hierarchy and Intelligence

During the mid-forties Harrell and Harrell studied the scores on the Army General Classification Test made by over eighteen hundred people in various civilian occupations. The results revealed the existence of an occupational hierarchy in regard to intelligence as measured by the A.G.C.T. In short, the mean intelligence of persons employed in various occupations differed sufficiently enough to be ranked in hierarchical order. For instance, the mean score for accountants was 128.1; for tool makers, 112.5; and for trailer drivers, 99.5.[24]

Several years later Stewart reported a similar investigation in which the A.G.C.T. scores were studied for 81,553 white enlisted men formerly engaged in 227 different civilian occupations. Her findings also revealed a well defined occupational hierarchy with respect to the A.G.C.T. scores.[25]

SUMMARY OF RELATED LITERATURE

A survey of the literature revealed an absence of systematic attempts to study the inventoried interests of

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[24]Thomas Harrell and Margaret Harrell, "A.G.C.T. Scores for Civilian Occupation," Educational and Psychological Measurements, V (Autumn, 1945), pp. 229-239.

[25]Naomi Stewart, "A.G.C.T. Scores of Army Personnel Groups by Occupations," Occupations, XXVI (October, 1947), pp. 5-41.

the mentally retarded. However, it disclosed some investigations which utilized other methods of interest measurement.

Investigative efforts in the realm of expressed interests were found to deal principally with interest patterns. Generally such studies were related to specific interests. Thus, academic and play interests as well as occupational aspirations and attitudes were the fields encompassed in the review of the literature concerning the expressed interests of retardates.

Where the manifest approach was utilized the review was primarily concerned with the job levels at which retardates were employed; and the presence of an occupational hierarchy in respect to intelligence scores was in evidence. These studies appeared to agree that few, if any, of the mentally retarded found jobs at the semi-professional and professional levels and that most of the retardates were employed in jobs at the unskilled and semi-skilled levels. These investigations further indicated that there was a positive relationship existing between the level of the job and the degree of intelligence which was required to perform it.

CHAPTER IV

PROCEDURE

General Characteristics of the Sample

The focus of this study was a group of mentally handicapped boys from the Individual Progress Department of the Omaha, Nebraska, Public Schools; the Beatrice, Nebraska, State Home; and the Glenwood, Iowa, State School. This group of 164 boys were chosen because they had the following characteristics in common: (1) all were between the chronological age of eleven and seventeen, (2) all were included in the range of intelligence quotients from fifty to eighty-five, and (3) all were in class attendance during the period under investigation.

Chronological Age. The minimum age of eleven was chosen because it is then that children are usually admitted to special classes for retardates in the Omaha Public Schools. The maximum age of sixteen years eleven months was chosen because compulsory attendance is required of all educable children to the age of sixteen in both the states of Iowa and Nebraska.

Intelligence Quotient. The appropriate designation for the group of individuals who stand between the mentally deficient and the normal is still a question. For years the

tendency has been to classify these individuals largely in terms of intelligence quotients. Today certain states do not legally specify any intelligence quotient range but place the responsibility for identification of the retardate with a qualified physician or psychologist. Iowa and Nebraska are examples.[1] As a result of this diagnostic procedure the I.Q. range of children assigned to special classes does not always adhere to the traditional classification of fifty to eighty.[2] As shown in Table II, page 92, an informal survey of the special class population revealed that local placement practices, although not explicitly adhering to the criteria for mental retardation as defined by the investigator, did so in practical application of its program for educable retardates.

Before recommendation for psychometric evaluation and special class placement is made, a boy must be unable to adjust to the regular school program. He must present

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[1]Nebraska Legislature, Handicapped Children, Cumulative Supplement of the 1943 Revised Statutes of Nebraska, Article 6, Section 43-604; State Institutions, Chapter 83, Section 83-221, Lincoln, Nebraska, 1957; Iowa Legislature, Title XII Education, Chapter 281, Education of Handicapped Children, Vol. I, Iowa Code 1950; Guardianship and Custody of Feeble-Minded, Section 222.14 Commission to Examine, State House, Des Moines, Iowa.

[2]Christine P. Ingram, Education of the Slow Learning Child, (New York: The Ronald Press Company, 1953), pp. 3-9.

evidence of retardation attested to by teacher observation and other achievement test data. Each boy to qualify for a special class is given a psychological test battery by a qualified psychologist or psychometrist. This battery must include an individual mental test which may be either the Terman-Merrill 1937 Revision of the Stanford-Binet or the Wechsler Intelligence Scale for Children.

The psychometric results are then reviewed by the director of the Child Study Service and the chief examiner. The director upon the basis of the psychometric findings recommends special class placement. To further insure valid placement all pertinent findings are reviewed by the director of Special Services, and recommendations for special class placement are made to the boy's parents. In every instance parental permission is required for admission to a special class.

It is the usual procedure for the institutions to require a pre-admission evaluation of each new patient. Usually this assessment consists of a multiple examination, combining tests of intelligence, social maturity, and other available techniques for determining the intellectual and social level of the subject. Within the institution itself a psychological test battery is administered. The results are evaluated by the staff, and recommendations are made for educational placement.

Thus, the intelligence quotient range of fifty to eighty-five was established as a criterion for mental retardation in this study.

Class Attendance. Class attendance was chosen as a selection criterion for several reasons. First, children who were not attending school (classes) in the institution were excluded from the study. This allowed the assumption that the institutional children participating in the investigation comprised a superior group within the institution. Second, children who were not attending class during the period of the investigation in either the institution or special classes were excluded from the study. This allowed the investigator to assume that such unusual environmental forces as prolonged vacations, job placement, illness, or detention by law enforcement agencies were not affecting the group of subjects involved in this study.

Sources of Information

Such information as chronological age, intelligence quotients, and school attendance was made available from the following sources:

Special Classes. The chronological age of each boy was secured from the teacher's Daily Attendance Register.

A confirmatory check for accuracy was made against each child's census card in the principal's office. School attendance was substantiated on the basis of the teacher's Daily Attendance Register and information available from the principal's office. The intelligence quotient score for each boy was found by checking the files of the Omaha Public School's Child Study Service, and the most recent individual mental test results were accepted.

Institutions. The chronological ages of the subjects found in the cumulative records were considered acceptable. School attendance was confirmed by the census information available from the principal's office and the institutions' Department of Statistics. Intelligence quotients were obtained from the psychological reports found in the cumulative records. The I.Q. scores which were used were the most recent obtained by an individual examination on either the Revised Stanford-Binet or the W.I.S.C.

The Sample

Of the total sample seventy-two boys, or forty-five per cent, came from the special classes at Bancroft School. The Beatrice State Home provided fifty boys, or thirty per cent, of the total sample, while the remaining forty-two boys, or twenty-five per cent, came from the Glenwood State

School. The institutions provided fifty-five per cent of the total sample. Table III illustrated the extent to which boys from special classes and institutions were represented in the total sample of the study.

TABLE III

THE PERCENTAGE OF BOYS FROM SPECIAL CLASSES AND INSTITUTIONS REPRESENTED IN THE TOTAL SAMPLE

Group	Number of Boys	Per Cent of Total Sample
Special Classes	72	45
Institutions	92	55
Total	164	100

Further analysis of the sample revealed the mean chronological age of special class boys to be thirteen years, ten months, and twenty-nine days (13-10-29), and their mean intelligence quotient was 70.18. The mean chronological age of institution boys was fourteen years, one month, and twenty-seven days (14-1-27), while their mean intelligence quotient was 65.11. The correlation between I.Q. and C.A. for special class boys was .09 and .08 for institution boys. Table IV on the next page illustrated the preceding.

TABLE IV

THE MEAN C.A., I.Q. AND CORRELATIONS BETWEEN I.Q. AND C.A. OF THE SAMPLE

Group	Number	Mean C.A.	Mean I.Q.	r I.Q. C.A.
Special Class	72	13-10-29	70.18	.09
Institution	92	14-1-27	65.11	.08

The Instrument

The Picture Interest Inventory developed by Kurt P. Weingarten was the instrument utilized in this investigation. It was primarily selected because of its simplicity, brevity of administration, and non-verbal character.

The Picture Interest Inventory represents a departure from previously established patterns in assessing occupational interests. A series of sketches of activities having occupational significance serve as the stimuli to which the examinee responds. The advantage of this approach with the retarded becomes apparent. For instance, reactions to word descriptions require both reading and conceptional skill which may somewhat interfere with the accuracy of the retardate's response. Pictures, on the other hand, which depict a specific process, action, or situation can be interpreted without depending on the possession of reading skills.

According to Weingarten the Picture Interest Inventory identifies fields of occupational interests. Responses to the illustrations which show men at work yield two groups of scores: (1) Fields of Occupational Interest and (2) Supplemental Scales. The six field scores are Interpersonal Service, Natural (Outdoors), Mechanical, Business, Esthetic, and Scientific. The three Supplemental Scales provide scores for interest in Verbal and Computational activities and for the Time Perceptive quality of one's vocational outlook. Included in the Appendix of this study is a Manual of Directions for the Picture Interest Inventory which describes these Field and Supplemental Scales in more detail.

Part I of the Inventory presents fifty-three triads to which the examinee must respond in forced-choice methodology. Part II consists of thirty individually related pictures which are free choice in nature. These latter pictures are repetitions of Part I illustrations. All item responses were keyed to one or more of the fields. Both like and dislike responses contribute to the field scores. Item analysis techniques were the means by which all scoring stencils were empirically developed. Preparation of the scoring keys is discussed on pages 8 to 10 of the Manual of Directions found in the Appendix of this study.

The author of this instrument contends that the norms reflect the performance of examinees in junior high schools,

high schools, and colleges who are represented in the population nationally. For comparative purposes, another interest inventory was administered to half of these standardizing cases. Score equivalents between levels and inventories were compared and reported to show close agreement at all points.

The reliability data of the Picture Interest Inventory calculated by the test-retest method is found in the Appendix, Table I on page 5 of the Manual of Directions. Other developmental procedures such as teacher rating studies, analysis of the instrument's internal character and function, and cross comparison with the Strong, Kuder, and Lee and Thorpe inventories are also reported in the Manual of Directions.

Directions for Administration

It was acknowledged that the retardates might experience some difficulty in comprehending the language employed in the directions for the Picture Interest Inventory. To avoid this and guarantee uniformity in administration a set of alternate directions was developed. Care was taken to insure that the content of the original directions was not altered. Five special class teachers were asked for their evaluation of the language level employed in the directions of the Picture Interest Inventory. Their suggestions were incorporated into a set of directions. The language of

these directions was then verbally evaluated by the teachers and needed changes made. After this screening the reorganized directions were used in administering the inventory to five retarded boys. From the directions these boys could tell the investigator what they were to do, and administration of the inventory proceeded smoothly. The directions thus evolved were employed in this study and may be found on page 96 of the Appendix.

Administration

The inability of the mentally retarded to read and write comprehensively enough to understand and follow directions limited the technique of administering the Picture Interest Inventory. The instrument was individually and privately administered to each boy in a room apart from his own classroom. This approach achieved some important objectives: (1) it mitigated the danger of invalid responses induced by the presence of classmates or teachers; (2) it assured a uniform presentation of the Inventory; (3) it afforded valuable personal contact and rapport with each boy; and, above all, (4) it made possible the recording of the responses in the appropriate place on the answer sheet.

To establish rapport each boy was greeted pleasantly and the purpose of the inventory briefly explained. The individual was then asked his name, his birthdate, and

several questions concerning his likes and dislikes in school. Every effort was made to make each boy feel at ease. It was felt that this was achieved very satisfactorily. The participants seemed to accept the inventory without question, were generally very cooperative, and in most cases were eager to respond. Each inventory, which started with Part I and concluded with the administration of Part II, lasted from twenty to thirty minutes. Responses were recorded as the inventory progressed. No problem was encountered in recording and at the same time keeping the inventory moving along smoothly. Questions about the items were rare. In the few cases where clarification was requested, a slow description of the activity as presented on page 20 of the Manual of Directions elicited a response.

At the conclusion of the inventory each boy was thanked and returned to his room.

Analysis of the Data

Analysis of the data was concerned with determining the following: (1) The differences in occupational interest fields as a function of intelligence using: first, educable mentally retarded boys in special classes; and second, educable mentally retarded boys in institutions. (2) The differences in occupational interest fields as a function of chronological age using: first, mentally retarded boys in special classes; and second, mentally retarded boys in institutions.

Correlations were calculated between the scores made on the Picture Interest Inventory and the variables of intelligence and chronological age. The Pearson Product Moment method was used to compute these correlations:

$$r = \frac{N\Sigma XY - \Sigma X \cdot \Sigma Y}{\sqrt{N \cdot \Sigma X^2 - (\Sigma X)^2}\ \sqrt{N \cdot \Sigma Y^2 - (\Sigma Y)^2}}$$

Where scatter plots indicated the possibility of a curvilinear pattern, another procedure was utilized. The predictor scores were transformed and correlations calculated between these and the other variable. The following formula was used to transform predictor scores:

$$X^1 = |X - M_x|$$

$$M_x = \frac{X}{N}$$

X = the predictor score

M_x = the mean of the predictor scores

$| \ |$ = the absolute value of the difference

X^1 = the transformed predictor score

Intercorrelations for the Picture Interest Inventory, which were calculated for each of the two groups, were computed by using the Pearson Product Moment method.

CHAPTER V

RESULTS

Intelligence and Occupational Interest Fields

Special Classes. Results of correlations calculated between the six Occupational Interest Fields measured by the Picture Interest Inventory and the intelligence quotients of special class boys are summarized in Table V, page 57. These findings indicated either very little or no relationship between intelligence of special class retardates and occupational interest fields measured by the Picture Interest Inventory.

Institutions. Correlations between intelligence quotients of institution retardates and their scores on the six occupational interest fields are shown by Table V, page 57. These results suggested very little relationship existed between intelligence and the occupational interest fields of institution retardates.

Curvilinearity. Inspection of scatter plots suggested the existence of a curvilinear trend in ten cases. Use of the transformed scores resulted in the correlation coefficients reported in Table VI on page 99 of the Appendix. A study of this table suggested a parabolic fit between the Business Field and the intelligence of Special Class boys.

The implication of this finding was that interest in the Business Field had a tendency toward the extremes as the intelligence of special class boys increased.

TABLE V

CORRELATION OF COEFFICIENTS BETWEEN SIX OCCUPATIONAL INTEREST FIELDS AND INTELLIGENCE OF SPECIAL CLASS AND INSTITUTION BOYS

Calculated Correlations Components	Special Class Coefficients Correlations	Institution Coefficients Correlations
Intelligence-Interpersonal Services	-.11	.11
Intelligence-Business	-.00	-.02
Intelligence-Esthetic	-.03	.11
Intelligence-Mechanical	.14	-.11
Intelligence-Natural	-.02	-.02
Intelligence-Scientific	.07	.03

Intelligence and Supplemental Scales

Special Classes. As shown by Table VII on page 58, the relationships resulting from the correlation of intelligence and the three Supplemental Scales of the Picture Interest Inventory were negative in nature for special class boys. These findings showed very little relationship

between intelligence of special class boys and the Supplemental Scales of the Picture Interest Inventory.

Institutions. Table VII also reports the calculated correlations between intelligence of institution retardates and the Supplemental Scales of the Picture Interest Inventory. Of the three positive relationships only the correlation between intelligence and the Verbal Scale (.22) was significant at the .05 level. This finding indicated a tendency for both intelligence and interest in activities involving the use of verbal symbols (writing and speaking) to increase together.

TABLE VII

CORRELATION OF COEFFICIENTS BETWEEN SUPPLEMENTAL SCALES AND INTELLIGENCE QUOTIENTS OF SPECIAL CLASS AND INSTITUTION BOYS

Components of Calculated Correlations	Special Class Coefficients Correlations	Institution Coefficients Correlations
Intelligence-Verbal	..08	.22*
Intelligence-Computational	-.03	.16
Intelligence-Time Perspective	-.14	.02

*Significant at .05 level

Chronological Age and Occupational Interest Fields

Special Classes. The correlations involving chronological age of mentally retarded boys in special classes and their attained scores on the six Occupational Interest Fields of the Picture Interest Inventory are found in Table VIII on page 60. As indicated by this table, the relationship between chronological age and the Interpersonal Service Field was negative (-.26) and significant at the .05 level. This finding suggested that as the chronological age of special class boys increased their interests in Interpersonal Service occupations grew smaller.

Table VIII also reveals that the relationship between the chronological age of special class retardates and the Mechanical Occupational Interest Fields was positive (.26) and significant at the .05 level. This implied that interests in the Mechanical Occupational Fields grew as the chronological age of the special class boys increased.

The remaining correlations in Table VIII seemed to point up little or no relationship between the chronological age of special class retardates and the other occupational Fields measured by the Picture Interest Inventory.

Institutions. The resulting correlations involving the chronological ages of institution retardes and their scores on the six Occupational Interest Fields of the

TABLE VIII

CORRELATION OF COEFFICIENTS BETWEEN SIX OCCUPATIONAL INTEREST FIELDS AND CHRONOLOGICAL AGE OF SPECIAL CLASS AND INSTITUTION BOYS

Calculated Correlation Components	Special Class Coefficients Correlations	Institution Coefficients Correlations
Chronological Age-- Interpersonal Service	-.26*	.10
Chronological Age-- Business	-.03	.02
Chronological Age-- Esthetic	-.01	.07
Chronological Age-- Mechanical	.26*	-.19
Chronological Age-- Natural	-.04	-.13
Chronological Age-- Scientific	.00	.17

*Significant at the .05 level

Picture Interest Inventory are found in Table VIII on page 60. These findings implied that there was not very much relationship between the chronological ages of institution retardates and Occupational Interest Fields.

Chronological Age and Supplemental Scales

Special Classes. A study of Table IX on page 62 indicated virtually no relationship between the chronological age of special class boys and the Supplemental Scales of the Picture Interest Inventory.

Institutions. The correlations between the chronological age of institution boys and the Supplemental Scales revealed the coefficients found in Table IX. From these correlations only chronological age and the Verbal Scale showed a positive (.22) relationship at the .05 level of significance. As shown by Table VII on page 58, the same relationship was found to exist between intelligence of institution retardates and the Verbal Scale. This suggested that perhaps both relationships reflected measurement of the same thing. Thus, it was implied that as the intelligence and chronological age of the institution boys increased, their interest in activities involving verbal symbols grew.

TABLE IX

CORRELATION OF COEFFICIENTS BETWEEN SUPPLEMENTAL SCALES AND CHRONOLOGICAL AGE OF SPECIAL CLASS AND INSTITUTION BOYS

Components of Calculated Correlations	Special Class Coefficients Correlations	Institution Coefficients Correlations
Chronological Age--Verbal	-.03	.22*
Chronological Age--Computational	.04	.14
Chronological Age--Time Perspective	-.14	.04

*Significant at the .05 level

Intercorrelation

The intercorrelation matrix for the Picture Interest Inventory is presented in Table X on page 63. On pages 64 and 65, Tables XI and XII report the intercorrelations derived from the scores of special class and institution retardates.

Weingarten noted that the six fields, which compose the first six components of these tables, have a large portion of forced choice items. Accordingly:

TABLE X

INTERCORRELATION MATRIX FOR THE PICTURE INTEREST INVENTORY*

Component	COMPONENT									
	Natural	Mechanical	Business	Esthetic	Scientific	Verbal	Computational	Time Perspective	Mean	S.D.
Interpersonal	-.25	-.55	.32	.09	-.25	.60	.26	.25	16.9	6.5
Natural		-.01	-.77	-.36	-.05	-.51	-.66	-.46	30.0	13.3
Mechanical			-.22	.02	.23	-.57	-.11	-.20	24.9	7.7
Business				.16	-.13	.73	.81	.47	21.0	11.1
Esthetic					-.35	.24	-.16	-.08	18.3	7.0
Scientific						-.30	.15	.32	19.6	7.7
Verbal							.59	.60	8.5	4.4
Computational								.45	11.2	5.1
Time Perspective									7.1	3.1

*Page 13, P.I.I. Manual. Number of cases = 394 Boys in Grades 8-12.

TABLE XI

SPECIAL CLASS

INTERCORRELATION MATRIX FOR THE PICTURE INTEREST INVENTORY*

Component	COMPONENT									
	Natural	Mechanical	Business	Esthetic	Scientific	Verbal	Computational	Time Perspective	Mean	S.D
Interpersonal	-.25	-.53	.26	.12	-.41	.21	.15	.07	21.1	6.1
Natural		-.07	-.80	-.20	-.11	-.16	-.70	-.86	27.4	11.5
Mechanical			-.20	-.04	.17	-.17	-.03	-.06	22.7	6.4
Business				-.08	-.04	.20	.82	.17	23.5	9.5
Esthetic					-.30	.00	-.33	-.03	19.4	6.0
Scientific						-.08	.17	.08	17.7	6.2
Verbal							.16	.04	9.6	3.5
Computational								.19	10.1	4.8
Time Perspective									6.3	2.7

*Number of cases = 72 Boys. I.Q. 50-85. C.A. 11-17.

TABLE XII

INSTITUTION

INTERCORRELATION MATRIX FOR THE PICTURE INTEREST INVENTORY*

Component	COMPONENT									
	Natural	Mechanical	Business	Esthetic	Scientific	Verbal	Computational	Time Perspective	Mean	S.D.
Interpersonal	-.33	-.60	.56	.09	-.37	.47	.02	.06	23.3	6.8
Natural		-.04	-.68	-.34	-.02	-.43	-.52	-.11	33.7	9.4
Mechanical			-.23	.04	.32	-.49	.02	-.08	19.5	5.7
Business				-.03	-.24	.68	.64	.14	20.5	7.6
Esthetic					-.43	.07	-.24	-.08	19.5	6.0
Scientific						-.41	.22	.04	16.7	4.7
Verbal							.44	.05	10.8	3.6
Computational								.15	8.8	3.7
Time Perspective									6.8	2.1

*Number of cases = 92 Boys. I.Q. 50-85. C.A. 11-17.

> This means that an especially high score in one field results in lower scores in the other five. This has the effect of producing lower positive and higher negative coefficients of correlation than would result if the responses to each Field were independent of responses to the other Fields.[1]

Weingarten's analysis also revealed two interrelated groups of three Fields each. One group was composed of the Interpersonal Service, Business, and Esthetic Fields, while the Natural, Mechanical, and Scientific Fields formed the other.

The Interpersonal Service, Business, and Esthetic Fields

The coefficients summarized in Table XIII were extracted from the intercorrelation matrices of the Picture Interest Inventory, Special Class, and Institution groups. From this table it may be seen that some relationship exists between the Interpersonal Service and Business Fields for the Picture Interest Inventory and Special Class groups, while a more substantial correlation may be noted for the Institution group.

The resulting correlations between the Interpersonal Service and Esthetic Fields for each of these groups show practically no relationship. The same may also be said for the correlations between the Business and Esthetic Fields;

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[1]Kurt P. Weingarten, Manual - Picture Interest Inventory (Los Angeles: California Test Bureau, 1958), p. 13.

however, in this case the relationship is positive for the Picture Interest Inventory group while negative for the Special Class and Institution groups.

TABLE XIII

CORRELATIONS FOR THE INTERPERSONAL, BUSINESS, AND ESTHETIC FIELDS OF THE PICTURE INTEREST INVENTORY, SPECIAL CLASS, AND INSTITUTION GROUPS

Calculated Correlation Components	Picture Interest Inventory	Institution Group	Special Class Group
Interpersonal-Business	.32	.56	.26
Interpersonal-Esthetic	.09	.09	.12
Business-Esthetic	.16	-.03	-.08

The Natural, Mechanical, and Scientific Fields

The correlations between the Natural, Mechanical, and Scientific Fields for each group of boys are presented in Table XIV on page 68. A study of this table reveals some correlation between the Mechanical and Scientific Fields for the Institution boys, a slight correlation between these two components for the Picture Interest Inventory, and very little correlation exhibited for the Special Class boys.

However, correlations between the Natural and Scientific Fields, as well as the Natural and Mechanical Fields, are negative in nature for all groups of boys and show practically no relationship.

TABLE XIV

CORRELATIONS FOR THE MECHANICAL, NATURAL, AND SCIENTIFIC FIELDS OF THE PICTURE INTEREST INVENTORY, SPECIAL CLASS, AND INSTITUTIONAL GROUPS

Calculated Correlation Components	Picture Interest Inventory	Special Class Group	Institution Group
Mechanical-Scientific	.23	.17	.32
Natural-Scientific	-.05	-.11	-.02
Natural-Mechanical	-.01	-.07	-.04

Correlation of the Two Interrelated Field Groups

Shown in Table XV on page 69 are the coefficients of correlation extracted from the intercorrelation matrices of the Picture Interest Inventory, Special Class, and Institution groups (Tables X, XI, and XII). These coefficients resulted when the Interpersonal Service, Business, and Esthetic Fields were correlated with the Natural, Mechanical,

and Scientific Fields. A study of this table indicates that the correlations of the Picture Interest Inventory group ranged from a .02 (Esthetic-Mechanical) to -.77 (Business-Natural). For the Institution group the range was .04 (Esthetic-Mechanical) to -.68 (Business-Natural); while for the Special Class group it was -.04 (Esthetic-Mechanical), and -.80 (Business-Natural). With the exception of the two positive relationships cited above, all coefficients of correlation in this table were negative in nature.

TABLE XV

CORRELATIONS FOR THE FIELD COMPONENTS OF THE PICTURE INTEREST INVENTORY, SPECIAL CLASS, AND INSTITUTION GROUPS

Calculated Correlation Components	Picture Interest Inventory	Special Class Group	Institution Group
Interpersonal-Natural	-.25	-.25	-.33
Interpersonal-Mechanical	-.55	-.53	-.60
Interpersonal-Scientific	-.25	-.41	-.37
Business-Natural	-.77	-.80	-.68
Business-Mechanical	-.22	-.20	-.23
Business-Scientific	-.13	-.04	-.24
Esthetic-Natural	-.36	-.20	-.34
Esthetic-Mechanical	.02	-.04	.04
Esthetic-Scientific	-.35	-.30	-.43

The coefficients of correlations examined in Tables XIII, XIV, and XV suggested the presence of two interrelated groups of three Fields each for both the Special Class and Institution boys. The three Fields that formed one group were the Interpersonal Service, Business, and Esthetic; the other was formed by the Natural, Mechanical, and Scientific Fields. Weingarten found the same groups of Fields to be interrelated in his study of 394 boys in grades eight to twelve.

The Verbal Scale and the Field Components

Presented in Table XVI on page 71 are the coefficients of correlation between each of the six fields and the Verbal Scale.[2] This table serves to point up the differences between the two interrelated groups of three Fields and the interest of Institution and Special Class boys in activities involving the use of verbal symbols.

An examination of the coefficients for three of the interrelated Fields (Interpersonal Service, Business, and Esthetic) reveals a substantial correlation between the Verbal Scale and the Business Field for the Picture Interest Inventory and Institution boys; however, the relationship

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[2] Ibid., p. 4. This scale is defined by Weingarten as a measure of interest in pictured activities involving the use of verbal symbols.

between these components for the Special Class boys is virtually non-existent. Some correlation exists between the Verbal Scale and the Interpersonal Service Field for the Institution boys; a more substantial relationship is found for the Picture Interest Inventory boys; and a slight correlation is exhibited for the Special Class boys. Very little or no correlation is shown between the Esthetic Field and the Verbal Scale for either the Institution or Special Class boys; but a slight relationship is found between these components for the Picture Interest Inventory boys.

TABLE XVI

CORRELATION OF COEFFICIENTS FOR THE SIX FIELDS AND THE VERBAL SCALE

Components Correlated	Picture Interest Inventory	Special Class Group	Institution Group
Verbal-Interpersonal	.60	.21	.47
Verbal-Business	.73	.20	.68
Verbal-Esthetic	.24	.00	.07
Verbal-Natural	-.51	-.16	-.43
Verbal-Mechanical	-.57	-.17	-.49
Verbal-Scientific	-.30	-.08	-.41

Table XVI further indicates that the relationships between the Verbal Scale and the Natural, Mechanical, and

Scientific Fields are negative for all three groups of boys. These coefficients reveal some relationship between the Verbal Scale and the Scientific Field for the Institution group, but only a slight correlation is seen for the Picture Interest Inventory group and practically none for the Special Class group. Some relationship is also found between the Verbal Scale and the Mechanical Field for the Institution group; however, a more substantial correlation is exhibited for the Picture Interest Inventory group, while practically none is shown for the Special Class group. Very little relationship is found between the Verbal Scale and the Natural Field for the Special Class group, and some correlation appears to exist for the Institution group; however, it is the Picture Interest Inventory group which exhibits the most substantial relationship between these components.

The Computational Scale and the Field Components

Table XVII on page 73 shows the coefficients resulting from the correlation between the Computational Scale and each of the six Fields.[3] An inspection of the table directs attention to the computational interest patterns for each group of boys.

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[3] Ibid., p. 5. Weingarten maintains that interest in the use of computational symbols and concepts is measured by the Computational Scale.

A study of Table XVII indicates substantial correlation between the Computational Scale and the Business Field for all groups. It may also be seen that some relationship exists between the Computational Scale and the Interpersonal Field for the Picture Interest Inventory group; however, these coefficients for the Special Class and the Institution groups indicate practically no correlation.

The coefficients between the Computational Scale and the Esthetic Field are negative; and they reveal some relationship for the Special Class boys, a slight correlation for the Institution boys, and virtually no relationship for the Picture Interest Inventory boys.

TABLE XVII

CORRELATION OF COEFFICIENTS FOR THE SIX FIELDS AND THE COMPUTATIONAL SCALE

Components Correlated	Picture Interest Inventory	Special Class Group	Institution Group
Computational-Interpersonal	.26	.15	.02
Computational-Business	.81	.82	.64
Computational-Esthetic	-.16	-.33	-.24
Computational-Natural	-.66	-.70	-.52
Computational-Mechanical	-.11	-.03	.02
Computational-Scientific	.15	.17	.22

It also becomes evident that the coefficients, shown in Table XVII, obtained when the Computational Scale was correlated with the Natural Field are negative and substantial for all groups of boys. The resulting correlations between the Computational Scale and the Mechanical Field for each group show practically no correlation; however, the existing relationship is positive for the Institution group and negative for the Picture Interest Inventory and Special Class groups. Between the Computational Scale and the Scientific Fields the positive coefficients show very little correlation for any of the groups.

The Time Perspective Scale and the Field Components

Results of correlations calculated between the six Fields and the Time Perspective Scale are shown in Table XVIII on page 75.[4] This table reveals a slight correlation between the Time Perspective Scale and the Interpersonal Service Field for the Picture Interest Inventory boys; however, almost no relationship is found between these components for either the Special Class or Institution boys. Some correlation between the Time Perspective Scale and the Business Field is shown for the Picture Interest

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[4] Ibid. Time Perspective Scale. The willingness to forego the immediate wants and desires and the attainment of short-range goals in order to focus on those goals which can only be reached after relatively longer periods of time is the quality assessed by this scale.

Inventory boys; but virtually no relationship is exhibited by the coefficients for either the Special Class or Institution boys. There is almost no relationship shown between the Time Perspective Scale and the Esthetic Field for any of the groups of boys; however, these relationships are positive for Special Class boys and negative for the Picture Interest Inventory and Institution boys (.03, -.08, and -.08).

TABLE XVIII

CORRELATION OF COEFFICIENTS FOR THE SIX FIELDS AND THE TIME PERSPECTIVE SCALE

Components Correlated	Picture Interest Inventory	Special Class Group	Institution Group
Time Perspective-Interpersonal	.25	.07	.06
Time Perspective-Business	.47	.17	.14
Time Perspective-Esthetic	-.08	.03	-.08
Time Perspective-Natural	-.46	-.86	-.11
Time Perspective-Mechanical	-.20	-.06	-.08
Time Perspective-Scientific	.32	.08	.04

The above table also indicates that the relationships between the Time Perspective Scale and the Natural and

Mechanical Fields are negative for all the groups. These coefficients reveal practically no relationship between the Time Perspective Scale and the Natural Field for the Institution group, some correlation between the Time Perspective Scale and the Natural Fields for the Picture Interest Inventory group, and a more substantial relationship between these two components for the Special Class group. Very little correlation is seen between the Time Perspective Scale and the Mechanical Fields for the Picture Interest Inventory group; however, practically no relationship is apparent between these two components for either the Institution or the Special Class group. A slight positive correlation appears between the Time Perspective Scale and the Scientific Field for the Picture Interest Inventory group, while practically no relationship is evident between these two components for either the Special Class or the Institution groups.

Mean Picture Interest Inventory Scores

On page 78 Table XIX summarizes the mean Picture Interest Inventory scores and their standard deviations for the Special Class and Institution cases. The difference between the means shown in Table XIX for the Natural and Mechanical interest scores is statistically significant beyond the one per cent level. The difference between the means for the Business interest scores is statistically

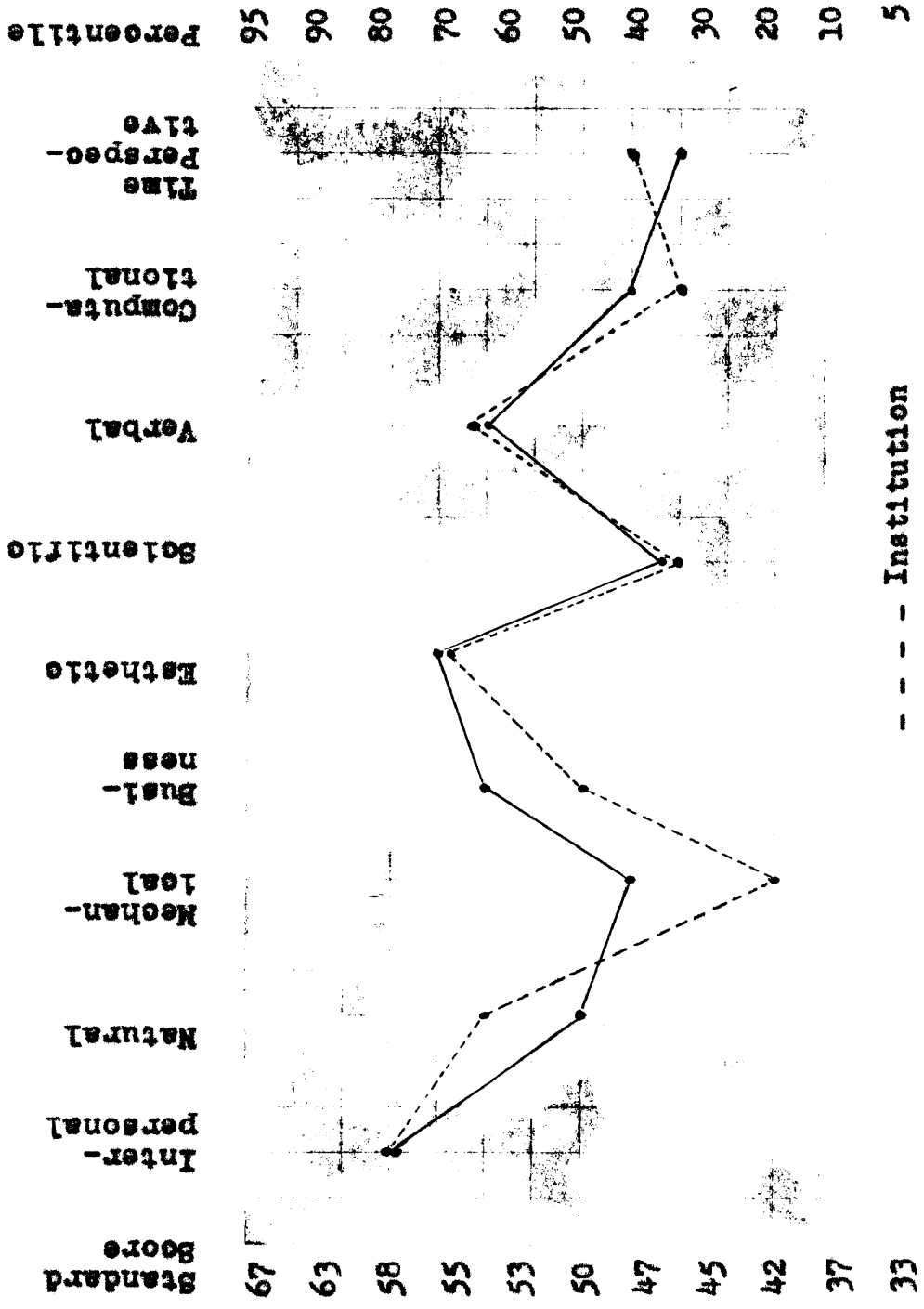
significant beyond the five per cent level. It appeared plausible that this difference between the means for the Natural interest scores of the two groups was influenced by environmental variables. Such conjecture was strengthened by the observations that both institutions were located in rural settings, and participation in agricultural pursuits on the institution's farm was considered part of the more mature and intelligent boys' training program. On the other hand, the special class boys were primarily products of the city where little, if any, experience of an agricultural nature was available.

Some idea of the interest patterns formed by the mean PII scores of each group is presented in Figure 1 on page 79. Essentially the same pattern of highs and lows is apparent for both groups of retardates. These profiles further show that the Special Class and Institution boys are high in two Fields, Interpersonal Service and Esthetic, but low in the Mechanical and Scientific Fields.

TABLE XIX

MEAN PICTURE INTEREST INVENTORY SCORES AND STANDARD DEVIATIONS FOR SPECIAL CLASS AND INSTITUTION CASES

Component	Special Class Mean Score	Special Class Standard Deviation	Institution Mean Score	Institution Standard Deviation
Interpersonal Service	21.1	6.1	23.3	6.8
Natural	27.4	11.5	33.7	9.4
Mechanical	22.7	6.4	19.5	5.7
Business	23.5	9.5	20.5	7.6
Esthetic	19.5	6.0	19.5	6.0
Scientific	17.2	6.2	16.7	4.7
Verbal	9.6	3.5	10.8	3.6
Computational	10.1	4.8	8.8	3.7
Time Perspective	6.3	2.7	6.8	2.1



PROFILES OF MEAN PII SCORES FOR SPECIAL CLASS AND INSTITUTION CASES

FIGURE 1

CHAPTER VI

SUMMARY AND CONCLUSIONS

I. SUMMARY

The purpose of this investigation was to examine the occupational interest fields of educable mentally retarded boys in special classes and institutions by determining: (1) differences in occupational interest fields as a function of intelligence and (2) differences in occupational interest fields as a function of chronological age.

The advent of the age of measurement saw the emergence of the study of interests from the theoretical abodes of the structuralists and functionalists. Introduced as a neophyte into the worlds of business and education, it came to be known as what the tests or inventories measured: expressed, manifest, or inventoried interests.

Early investigators relied on expressed interests, but the ensuing research demonstrated that it was more worthwhile to focus on the inventoried approach, which had its inception at the 1920 Carnegie graduate seminar on interests.

While the growth of techniques of interest measurement stimulated exploratory efforts in the ranks of vocational psychologists, other psychologists concentrated

their investigative efforts on other types of human characteristics. The result was a rapid accumulation of data in the area of vocational interests for industry but a relatively unexplored area for educational and classroom guidance.

Early educators delegated their responsibility for the development of ways to educate those previously deemed incapable of profiting from education to the medical profession. Thus, sensationalism, sense and muscle training, had its influence on the early educational techniques for retardates.

The dawn of the twentieth century saw a gradual shift from the sense training approach. Emerging in its place were such methods as the "watered down curriculum," the unit experience plan, the correlation of handwork and crafts with the tool subjects, and the occupational education movement. However, unlike their predecessor, these methods centered around two basic components: (1) adapting instruction to the ability of the child and (2) making the programs less academic and more practical.

A survey of the literature in psychology and education revealed a dearth of systematic attempts to study the inventoried interests of retardates. However, investigations utilizing the expressed and manifest approaches were found.

The review of the literature concerning the expressed interests of retardates encompassed the areas of academic and play interests, as well as vocational aspirations and attitudes.

Where investigators utilized the manifest method, the review of the literature was primarily concerned with the job levels at which retardates were employed and the existence of an occupational hierarchy with respect to intelligence scores.

The Picture Interest Inventory was individually administered to 164 retardates, consisting of seventy-two boys from the special classes of Bancroft School, Omaha, Nebraska; fifty boys from the Beatrice State Home, Beatrice, Nebraska; and forty-two boys from the Glenwood State School, Glenwood, Iowa. All these boys ranged from eleven through sixteen in chronological age and possessed intelligence quotients between fifty and eighty-five.

Responses to the inventory were classified according to components measured by the Picture Interest Inventory. Coefficients of correlation were calculated between these components and intelligence using: first, educable mentally retarded boys in special classes; and, second, educable mentally retarded boys in institutions. This procedure was also utilized to obtain the correlation between the components of the Picture Interest Inventory and the chronological

age of special class and institution retardates. An attempt was also made to fit a curve to ten cases suggesting curvilinearity; in addition, intercorrelations were calculated for the Picture Interest Inventory scores of both groups of retardates.

II. CONCLUSIONS

Little or no relationship was indicated between the intelligence of special class and institution retardates and their occupational interest Fields as measured by the Picture Interest Inventory. However, a curvilinear trend was apparent between the intelligence of special class boys and the Business Field.

A significant positive relationship was found between the Verbal Scale and the intelligence of institution boys, while little relationship was revealed between the intelligence of special class boys and the Supplemental Scales.

While a negative relationship between the Interpersonal Service Field and chronological age and a positive correlation between the Mechanical Field and chronological age were found for the special class boys, virtually no relationship was shown between the occupational interest Fields and the chronological age of institution boys.

A significant positive relationship was revealed between the chronological age of institution boys and the

Verbal Scale. However, little relationship was found between the chronological age of special class boys and the Supplemental Scales.

Although the intercorrelations indicated a relationship between the Verbal Scale and the occupational Fields for the institution group, little correlation was revealed between these components for the special class group. On the other hand, a substantial relationship between the Business Field and the Computational Scale was revealed for both groups of retardates. However, virtually no relationship was found between the Time Perspective Scale and the Field components for either the special class or institution groups.

The patterns formed by the mean PII scores of the special class and institution boys was high in the Interpersonal Service and Esthetic Fields, but low in the Mechanical and Scientific Fields. In addition, the difference between the means of the Natural and Mechanical interest scores of the special class and institution boys was statistically significant beyond the one per cent level; and the difference between the Business interest scores of the two groups was statistically significant at the five per cent level.

RECOMMENDATIONS FOR FURTHER STUDY

The occupational interests of retardates hold countless sources of information for educational and behavioral psychology. A number of problems in need of further study occurred to the investigator during the course of this investigation. A few of these are as follows:

The development of a pictorial instrument by which occupational interest patterns could be identified in the mentally retarded.

A study to determine the realism of identified occupational interest patterns of retardates.

Independent studies of the reliability and validity of the picture interest inventories appearing on the contemporary scene.

A longitudinal study of the development of vocational choices of educable retardates to indicate the process involved.

A study to determine the effects of curriculum content on occupational interest fields and patterns of retardates.

A study to determine the effects of vocational guidance and counseling given by school personnel on occupational interest fields and patterns of the retarded.

A study to determine if there is a period of job readiness in the retarded so that occupational materials could be presented at the optimum time in their educational program.

B I B L I O G R A P H Y

BIBLIOGRAPHY

A. BOOKS

Anastasi, Anne. Psychological Testing. New York: The Macmillan Company, 1954.

Baker, Harry J. Introduction to Exceptional Children. New York: The Macmillan Company, 1953.

Cronbach, Lee J. Essentials of Psychological Testing. New York: Harper and Brothers, Publishers, 1949.

Duncan, John. The Education of the Ordinary Child. New York: The Ronald Press Company, 1943.

Fryer, Douglas. The Measurement of Interests. New York: Henry Holt and Company, 1931.

Ingram, Christine P. Education of the Slow Learning Child. New York: The Ronald Press Company, 1953.

Jordan, Arthur M. Measurement in Education. New York: McGraw-Hill Book Company, Inc., 1953.

Kirk, Samuel A., and G. Orville Johnson. Educating the Retarded Child. New York: Houghton Mifflin Company, 1951.

Kuhlen, R. G. Psychology and Adolescent Development. New York: Harper and Brothers, Publishers, 1951.

Lehman, Harvey C., and Paul Witty. The Psychology of Play Activities. New York: A. S. Barnes and Company, 1927.

Lindquist, E. F. (ed.). Educational Measurement. American Council on Education, Washington, D. C. Wisconsin: George Banta Publishing Company, 1951.

Louttit, C. M. Clinical Psychology of Exceptional Children. New York: Harper and Brothers, Publishers, 1957.

Ross, C. C., and Julian C. Stanley. Measurement in Today's Schools. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1954.

Sarason, Seymore B. Psychological Problems in Mental Deficiency. New York: Harper and Brothers, Publishers, 1959.

Strong, Edward K., Jr. Changes of Interests With Age. Stanford University, California: Stanford University Press, 1931.

Super, Donald E. Appraising Vocational Fitness by Means of Psychological Tests. New York: Harper and Brothers, 1949.

_____. The Psychology of Careers. New York: Harper and Brothers, 1957.

Travers, Robert M. W. Educational Measurement. New York: The Macmillan Company, 1955.

Wallin, J. E. Wallace. Education of Mentally Handicapped Children. New York: Harper and Brothers, 1955.

Wrightstone, Wayne J., Joseph Justman, and Erving Robins. Evaluation in Modern Education. New York: American Book Company, 1956.

B. PUBLICATIONS OF THE GOVERNMENT, LEARNED SOCIETIES, AND OTHER ORGANIZATIONS

Blair, Glenn Meyers. "Subject Preferences of Mentally Superior and Inferior High School Students," Journal of Educational Research, Vol. 33, October, 1939.

Bobroff, Allen. "Economic Adjustment of 121 Adults, Formerly Students in Classes for Mental Deficiency," American Journal of Mental Deficiency, LX (January, 1956), pp. 525-535.

Channing, Alice. Employment of Mentally Deficient Boys and Girls. United States Department of Labor, Children's Bureau Publication M, Number 210. Washington: Government Printing Office, 1932.

Charles, Don C. "Ability and Accomplishments of Persons Earlier Judged Mentally Deficient," Genetic Psychology Monographs, LIII (February, 1953), pp. 3-71.

Clark, Carroll, and Noel P. Gist. "Intelligence as a Factor in Occupational Choices," American Sociological Review, II (October, 1938), pp. 683-694.

DiMichael, Salvatore. Vocational Rehabilitation of the Mentally Retarded. Rehabilitation Service Series, Number 123, Washington: Government Printing Office, 1950.

Douglas, Marcella E. "Some Concrete Contributions to Occupational Education in the Academic Classroom," American Journal of Mental Deficiency, XLVIII, Number 3, (January, 1944), pp. 288-291.

The Education Policies Commission. The Purpose of Education in American Democracy. The National Education Association, Washington, D. C., 1946.

Harrell, Thomas, and Margaret Harrell. "A.G.T.C. Scores for Civilian Occupations," Educational and Psychological Measurements, V (Autumn, 1945), pp. 229-239.

Hungerford, Richard H., Chris J. DeProspo, and Louis E. Rosenzwieg. "The Non-Academic Pupil," Philosophy of Occupational Education, New York: The Association for the New York City Teachers of Special Education, 1948.

Iowa Legislature. Title XII Education. Chapter 281. Education of Handicapped Children, Vol. I, Iowa Code 1950, State House, Des Moines, Iowa, 1950.

_____. Title XII Education. Chapter 222. Guardianship and Custody of Feeble-Minded. Section 222.14 Commission to Examine, Vol. I, Iowa Code 1950, State House, Des Moines, Iowa, 1950.

Kennedy, Ruby Jo. "The Social Adjustment of Morons in a Connecticut City." Mansfield Training Schools, Social Service Department, State Office Building, 1948), p. 120.

Keys, Noel, and Jannette Nathan. "Occupations for the Mentally Retarded," Journal of Applied Psychology, XVI (October, 1932), pp. 497-511.

Kirk, Samuel A. "Needed Projects and Research in Special Education," The Education of Exceptional Children, pp. 320-334. Forty-Ninth Yearbook of the National Society for the Study of Education, Part II. Chicago, Illinois: The University of Chicago Press, 1950.

Lewis, Daryton W., and William McGehee. "Comparison of Interests of Mentally Retarded," School and Society, LII (December, 1940), pp. 592-600.

Martens, Elise H. Occupational Experiences for Handicapped Adolescents in Day Schools. United States Office of Education, Bulletin 1937, Number 30, Washington: Government Printing Office, 1938.

Nebraska Legislature. Handicapped Children. Cumulative Supplement of the 1943 Revised Statutes of Nebraska, Article 6, Chapter 43, Section 43-604, Lincoln, Nebraska, 1957.

_____ _____. State Institutions. Cumulative Supplement of the 1943 Revised Statutes of Nebraska, Article 2, Chapter 83, Sections 83-221, Lincoln, Nebraska, 1957.

Pierce- Jones, John, and H. D. Carter. "Vocational Interest Measurement Using a Photographic Inventory," Educational and Psychological Measurement, Volume XIV, Number 4 (Winter), 1954, pp. 646-671.

Schlotter, B., and M. Svendsen. "An Experiment in Recreation with the Mentally Retarded," Behavior Research Fund, Chicago, Illinois, 1932, pp. 75.

Schmidt, B. "Reading Habits and Interests of Mentally Retarded Girls," Elementary English Review, XIX (December, 1942), pp. 273-281.

Sloan, William, and Allen Raskin. "A Study of Certain Concepts in High Grade Mental Defectives," American Journal of Mental Deficiency, LVI (January, 1952), pp. 638-642.

Stewart, Naomi. "A.G.T.C. Scores of Army Personnel Groups by Occupations," Occupations, XXVI (October, 1947), pp. 5-41.

Witty, Paul A., and Harvey C. Lehman. "Vocational Attitudes and Intelligence," Elementary School Journal, June, 1931, pp. 735-746.

C. UNPUBLISHED MATERIALS

Blair, Glenn Meyers, "Mentally Superior and Inferior Children of Junior and Senior High School Age." Unpublished Doctoral Dissertation, Columbia University, Teachers College, New York, 1938.

Erdman, Robert Lee. "Vocational Choices of Adolescent Mentally Retarded Boys." Unpublished Doctoral Dissertation, the University of Illinois, Urbana, 1957.

Fliegler, Louise Arron. "A Study of Expressed Interests of Mentally Retarded." Unpublished Doctoral Dissertation, New York University, New York City, 1954.

Lavender, Joseph. "The Vocational Realism of Mentally Retarded Boys in the Bronx New York." Unpublished Doctoral Disseration, Columbia University, New York City, 1957.

Volker, Paul. Unpublished Studies from Annual Reports of the Detroit Board of Education.

A P P E N D I X

TABLE II

PERCENT OF SPECIAL CLASS ENROLLMENT
WITH I.Q. 50-85*

Boys Enrolled	Boys With I.Q. 50-85	Percent Enrolled With I.Q. 50-85
80	78	97

*April, 1959

CALIFORNIA TEST BUREAU

MANUAL

Picture Interest Inventory

Grades 7 to Adult

DEVISED BY KURT P. WEINGARTEN

PUBLISHED BY CALIFORNIA TEST BUREAU — 5916 HOLLYWOOD BOULEVARD — LOS ANGELES 28, CALIFORNIA
BRANCH OFFICES: NEW CUMBERLAND, PA.; MADISON, WIS.; DALLAS, TEXAS

Picture Interest Inventory

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THE TEST

The *Picture Interest Inventory* is designed to help an individual determine the pattern of his occupational interests, and at the same time indicate to him those specific occupational fields which have career possibilities based on interest. A particular asset of the PII is the use of illustrations of activities having occupational significance. This first edition of the inventory represents a significant departure from previously established patterns in assessing occupational interest. The illustrations (or sketches) clearly indicate what the persons depicted are doing and, therefore, in no way is an individual's choice influenced by his understanding of words or occupational terms. Since no words are used, the PII can be given to practically all boys from grade seven upward, regardless of their reading or writing ability, or language comprehension. It is not, however, a device to indicate aptitude for, or skill levels in, various occupations.

Every year thousands of young people enter occupations for which they have little preparation or ability. It is also true that there are great numbers who enter occupations for which they may be well qualified, by training and ability, but for which they have very little interest. The PII will help an individual to appraise his interests systematically. This knowledge, in conjunction with other information pertaining to himself and to the social and economic situation in which he functions, will aid the individual in choosing an occupation in which he is likely to be both successful and satisfied. It is obvious that a fully satisfactory adjustment to life will be enhanced by a good occupational adjustment.

Considerable research has been conducted upon this instrument in conjunction with its development and validation. It is quick and simple to administer. Although designed for and validated upon boys, it can also be administered to girls. It is appropriate for adults as well as adolescents.

PART 1

Description of the Inventory
Reliability and Validity

Picture Interest Inventory

DESCRIPTION OF THE TEST

Research in the field of vocational counseling has revealed that a large percentage of every prework age group has made no vocational choice. Further, when choices are stated, they tend to be selected from a narrow range of occupational titles. They also tend to correspond quite closely to occupations that adults rate high in prestige value.

Instruments that identify fields and patterns of occupational interests are useful in that they enable the counselor to do more effective educational and vocational counseling. The immediate result of such counseling is more effective vocational preparation; the ultimate result is greater job or work satisfaction. The *Picture Interest Inventory* helps to identify the field or fields in which individuals have vocational interests. Carefully drawn sketches of situations having vocational significance are rated by examinees in both free-choice and forced-choice format. Two groups of scores are obtained:

1. Fields of Occupational Interest
   a. Interpersonal Service
   b. Natural
   c. Mechanical
   d. Business
   e. Esthetic
   f. Scientific
2. Supplemental Scales
   a. Verbal
   b. Computational
   c. Time Perspective

These nine scores are derived from items presented in the 53 triads of Part I and from the 30 individually rated illustrations of Part II. Part II illustrations are repetitions of 30 of the 159 illustrations used in Part I.

All item responses are keyed in one or more of the six fields. Both Like and Dislike responses contribute to these Field scores. All scoring keys have been developed empirically by means of item analysis techniques. Consequently, the number of scores varies on each key as to the contributions of the L and D responses.

The obvious factor of occupational prestige or status of the three pictures in each triad has been controlled by matching their code numbers in the *Dictionary of Occupational Titles*[1] and through careful review by the author and other judges. The controlled selection and arrangement of items eliminates, to the extent that this is possible, the complicating factors of prestige value differences and keeps attention focused on the inherent appeal of the pictured activity.

One of the outstanding features of the *Picture Interest Inventory* is its completely non-verbal character. The examinee has no verbal symbols to interpret. The few simple, necessary directions are read by the examiner. The inventory can be completed in twenty to thirty minutes, and therefore can easily be administered within a forty-minute class period.

Either hand-scoring or machine-scoring procedures may be employed. A profile page has been carefully prepared to aid in the interpretation of results.

All pictures show men at work; hence, all validation and norm data were obtained from inventories taken by males. However, some experimental results and percentile data based on responses made by female students are reported.

This inventory is designed for the identification of occupational interests at the earliest time that such measurement is practicable, the seventh grade. Its use therefore ranges from grade 7 upward.

FIELDS OF INTERESTS

The possible responses to the fifty-three triads of Part I and the thirty individual pictures of Part II of the PII have been keyed to yield scores in six occupational fields. These fields are broad categories into which the jobs performed are classified. The individual's score in each of these fields is obtained by counting Like and Dislike responses keyed for a particular field.

A list of the 159 pictures is found in Part 3 of the manual on page 20. A brief description of each of the six fields follows:

Interpersonal Service. This is a field of vocational activities characterized by assistance rendered to other people. Such service may be given to individuals as personal service, or it may be performed through agencies and institutions serving groups. The variety of interpersonal service occupations is great. They range from high prestige professions such as ministry, law, medicine, and teaching through health, welfare, and protective activities to such occupations as waiter, barber, cook, and janitor. Serving others is generally regarded as the major motivational element for

[1] United States Employment Service, *Dictionary of Occupational Titles, Volume II, Occupational Classification, Second Edition* (Washington, D.C.: United States Government Printing Office, 1949), 743 pp.

entrance to and finding satisfaction in this group of vocational activities. The twenty-six pictures which are classified as Interpersonal Service depict individuals performing tasks such as the following:

> Teaching arithmetic, directing traffic, addressing a jury, cutting hair, giving room service, examining a patient, waiting on tables, umpiring a playground game, carrying luggage on a ship, and delivering a sermon.

Natural. Farming, ranching, and the associated activities involving animal husbandry, lumbering, and crop raising are included in this large area of vocational life. An essentially unique characteristic of this field is its relationship to natural processes and resources. Most of these activities are consequently performed in the open a large portion of the working time. The twenty-seven pictures classified as Natural include such activities as:

> Feeding chickens, felling a tree, picking apples, treating a pet, harvesting potatoes, plowing, repairing a tractor, loading logs, milking cows, treating a horse, and feeding stock.

Mechanical. Ever-increasing industrial applications of machines to every phase of our economy call for increasing use of mechanical skills and understandings. Interests in design, assembly, operation, maintenance, and repair of motors and other mechanical equipment including appliances and tools comprise a grouping of vocational interests which has a common core running throughout. Its early age expression is "likes to take things apart and put them together again." Students with strong mechanical interests, coupled with ability and proper training in mathematics, constitute a valuable source of needed technically trained personnel for the demands of the increasing automation of our way of life. The twenty-six pictures classified in the Mechanical Field include activities such as the following:

> Repairing a watch, repairing a washing machine, sketching a model house, operating a printing press, repairing a radio, working in a cannery, repairing shoes, directing a crane operation, shingling a roof, and operating a lathe.

Business. Interest in the numerous occupations found in the field of business includes the two somewhat separable fields of endeavor involving either sales and distribution or the detail of office and clerical work. Both kinds of business activities involve a high proportion of workers and are of interest to many of those planning a career. The following activities are among the twenty-six depicted as Business activities:

> Operating an adding machine, selling produce, typing, making a ledger entry, wrapping a shirt, selling an automobile, filing, sorting mail, showing real estate, and court reporting.

Esthetic. Activities relating to creative expression, music, drama and theater, painting, etc., comprise an important grouping of vocational outlets. They are characterized by the interpretation and communication of emotion or inner feeling. It should be noted that this, like the other fields, is an active performing kind of interest, and not just appreciation for the work of others, important as this phase of esthetic enjoyment is to recreational and emotional life. The activities presented range from the highly creative activities such as sculptor and concert performer to those of sign painter and window decorator. Among the twenty-three pictures of such Esthetic activities are:

> Hand-carving a plaque, announcing on radio, playing a clarinet, sculpturing, lettering signs, dressing windows, photographing a subject, making pottery vases, designing a dress, and making floral arrangements.

Scientific. Interests in field and laboratory sciences which require considerable formal training in mathematics, biology, chemistry, physics, and allied subjects constitute this grouping. Professional opportunities in electronics, nuclear physics, rocketry, etc., offer a broad scope for those whose interests and motivations are centered in the scientific fields. In this group are classified those whose interests are primarily in the physical and biological sciences rather than in the social and behavioral fields. Most of the occupations characterized by interests in this field are professional in level. There are a limited but important number of semi-professional activities such as laboratory technician, X-ray technician, and laboratory assistant. There are almost no skilled or semi-skilled occupations whose primary relationships are with this field of interests. The following are some of the twenty-two activities pictured in this Field:

> Using a microscope, doing a chemical experiment, inspecting meat, studying the stars, taking a blood sample, dissecting a fish, studying plant growth, examining an X-ray negative, controlling corn pollenization, and discussing a geological exhibit.

SUPPLEMENTAL SCALES

There are three non-occupational scales which have been empirically developed for use with the *Picture Interest Inventory*. Each draws upon pictures in all fields and gives added interpretive value to the instrument by providing information about the vocational interest pattern which will be of assistance to counselees in making selections among the six occupational Fields.

Verbal. This Scale is a measure of interest in pictured activities involving the use of verbal symbols. This interest may be in expressing oneself through either written or spoken words. The ability to communicate effectively is often a key to occupational success. Conversely, a lack of the necessary interest or ability to verbalize should also be considered in vocational planning. While most vocations requiring extensive verbal skills

are in the Interpersonal and Business Fields, there are activities in all six Fields that will appeal to those with an interest in writing or speaking.

Computational. It is common knowledge that some individuals gain satisfaction in working with numbers, while others find such activity dull. Interest in the use of computational symbols and concepts is measured by this scale. The Business Field contains the largest number of careers that are heavily loaded with computational activities. However, an indication of a counselee's interest in using numbers is of considerable value in studying occupations in all fields.

Time Perspective. In making choices between various occupations, an important consideration is the amount of preparation and training required before competency in the occupation is reached. One of the major differences in such pre-vocational preparation is the number of months or years it will require. The willingness to forego the immediate wants and desires and the attainment of short-range goals in order to focus on those goals which can only be reached after relatively longer periods of time is the quality assessed by this scale. In relation to the selection of an occupation, differences in time perspective will have considerable effect upon the level of vocational aspiration, for, almost without exception, prestige occupations require longer periods of academic preparation and require many intermediate stages before full stature is attained.

RELIABILITY AND VALIDITY

The remaining pages in Part 1 are devoted to two important kinds of information about the *Picture Interest Inventory* — Reliability and Validity. The data in these sections indicate the considerable confidence with which one may employ the scales of this instrument. Almost without exception, the statistical analysis of results shows that the expected or desired relationships between PII variables and appropriate criteria do exist.

RELIABILITY

The reliability of the PII is reported for two separate groups, a group of 85 boys in Grade 12 and another group of 80 boys in Grade 8. The test-retest method was employed with a one-week interval between testings. The Pearson product-moment method was used to compute the coefficients.

In view of the known high degree of stability of interests, particularly over a short period of seven days, any major effects on results due to shifts in interests within that time can be largely discounted. It is interesting to note, however, that the higher reliabilities generally occur in the twelfth-grade testing. This confirms one's expectation that as students approach maturity, interests tend to become more stable. The relationships between the two administrations are shown in Table 1 below.

In interpreting individual scores, the standard error of measurement is usually more helpful than the reliability coefficient. The coefficient of reliability provides only a general indication of the confidence which one can place in a measuring instrument. However, the standard error of measurement indicates how closely obtained scores approximate true scores. For example, the chances are two to one that students' scores will not differ from true scores by more than the standard error of measurement, or nineteen to one by more than twice the standard error of measurement.

TABLE 1

RELIABILITY COEFFICIENTS AND RELATED DATA FOR THE PICTURE INTEREST INVENTORY — GRADES 12 AND 8

COMPONENT	DATA FOR GRADE 12*						DATA FOR GRADE 8†					
	r‡	S.E. Meas.	First		Retest		r‡	S.E. Meas.	First		Retest	
			Mean	S.D.	Mean	S.D.			Mean	S.D.	Mean	S.D.
Fields of Interests												
Interpersonal												
Service	.87	2.2	14.9	6.2	14.6	6.3	.83	2.1	18.1	5.2	17.9	5.8
Natural	.92	3.5	29.9	12.2	29.8	12.6	.90	4.2	30.9	13.6	31.8	13.9
Mechanical	.86	3.0	26.8	8.1	25.8	8.9	.87	2.5	23.2	6.9	23.3	7.4
Business	.83	4.3	19.8	10.5	20.5	11.4	.83	4.3	20.9	10.5	21.7	10.9
Esthetic	.87	2.8	20.9	7.8	21.0	8.0	.78	3.1	18.3	6.9	17.6	7.2
Scientific	.86	2.5	19.9	6.7	19.2	6.6	.84	2.8	19.0	7.1	18.5	7.4
Supplemental Scales												
Verbal	.76	2.2	8.2	4.4	8.2	4.5	.72	2.1	8.8	4.0	8.8	4.2
Computational	.83	2.0	10.6	4.9	10.7	5.4	.81	2.2	10.7	5.1	11.1	5.5
Time Perspective	.76	1.3	7.1	2.7	7.4	2.8	.69	1.6	6.6	2.9	7.1	2.8

* N = 85.
† N = 80.
‡ Calculated by the test-retest method, using the Pearson product-moment formula.

Thus, the standard error of measurement in raw score units in Table 1 is interpreted as follows: In the Mechanical Field for Grade 12, the chances are two to one that the students' scores will not vary more than three points and nineteen to one that they will not vary more than six points from their true scores.

VALIDITY

The advantages of pictures over verbal statements have had considerable exploitation in all phases of communication. The old Chinese saying, "A picture is worth a thousand words," has some application to the problem of interest measurement. Studies have shown, for instance, that reactions to word descriptions of occupations require both reading and conceptual skills that may somewhat interfere with accuracy of response.[2] Pictures, on the other hand, avoid ambiguities of interpretation in that a specific process, action, or situation can be interpreted without depending on the possession of reading skills. In neither case — picture or word description — is the projective significance assigned by the individual entirely removed, but in the former, it is more uniform. The "halo effect" associated with occupational titles often distorts the real nature of the tasks, practices, and activities involved in the occupation. Conversely, many job activities have been labeled in a prejudicial manner. When the verbal label is absent, choice is affected to a much lesser degree by those variables inherent in "labeling."

CONTENT VALIDITY

The items of the *Picture Interest Inventory* have been carefully developed to assure content validity.

Item Preparation. Most of the items were in the original edition of the *Inventory* which was developed in 1951.[3] This edition was made up of 150 pictures that represented six vocational fields. These Fields were:

1. Artistic
2. Business
3. Handicraft
4. Mechanical
5. Natural
6. Service

The representations were made in the form of sketches, with one clearly predominant figure in each. The sketches were drawn with only the pertinent occupational tools or environment included. The dominant figure was drawn to enable the examinee to project himself into the depicted activity.

An experimental edition, which was a revision of the original *Inventory*, was prepared in 1954. In it, the mechanical and the crafts pictures were tentatively combined to form one Field, and a number of illustrations representing scientific activity were added to produce a Scientific Field. A number of professional level pictures in all fields was also added. This edition contained 207 pictures arranged in rows of three pictures each. They were so numbered that either of two methods of test administration was possible. The examinee could mark each item Like or Dislike, or he could respond to each row of three items (triad) by marking the one he liked most and the one he liked least. All of the pictures in the present edition of the *Inventory* are developed from this experimental edition.

Item Selection and Presentation. The 207 pictures were divided into six Fields, and six scoring keys were established logically with each picture representing a Like response for the Field for which it had face validity. This edition, together with the *Occupational Interest Inventory*,[4] was administered to over two hundred high school boys. *Picture Interest Inventory* answer sheets of examinees whose scores were in the top twenty-seven per cent in each Field on both the PII and OII were used to determine the discrimination of each Like and Dislike response in each of the six Fields.

On the basis of these statistics, the fifty-three most discriminating triads were identified and became the items in the present edition. A number of items depicting various recreational activities that had originally been inserted for motivational value were included in the item analysis. Considerable differences in such interests were found among the six criterion groups. The three most discriminating triads were retained and included among the fifty-three triads mentioned above.

When the *Inventory* was finally assembled, the number of pictures representing each Field ranged from a low of twenty-two Science pictures to a high of twenty-seven Natural pictures.

The illustrations show men engaged in activities ranging from professional occupations to unskilled jobs. The effect of the prestige value attached to the various pictures is extremely significant and, if not controlled, could easily invalidate the choice between Fields. For example, a triad made up of pictures of a dishwasher, a machinist, and a chemist would involve a choice of prestige value as well as a choice of Fields. This influence was minimized by combining occupations of equal level to form the triads. The occupations represented by each picture were identified as professional, semi-professional, skilled, semi-skilled, or unskilled. The *Dictionary of Occupational Titles*[5] and the judgment of several raters served as the basis for the classification. The professional and semi-professional occupations were then combined, as were the semi-skilled and unskilled. The triads finally chosen consisted of three recreational triads and eighteen with high, seventeen with average, and fifteen with low occupational level ratings. This distribution is not, of course, based

[2] Jerome Levy, "Readability Level and Differential Test Performance: A Language Revision of the Study of Values," *Journal of Educational Psychology*, 49:6-12, February, 1958.

[3] Kurt P. Weingarten, "The Measurement of Interests in Non-Professional Vocations by Means of a Pictorial Inventory" (unpublished Doctor's dissertation, The University of Southern California, 1953), 166 pp.

[4] Edwin A. Lee and Louis P. Thorpe, *Occupational Interest Inventory* (Los Angeles: California Test Bureau, 1956).

[5] United States Employment Service, *Dictionary of Occupational Titles, Vol. III* (Washington, D.C.: United States Government Printing Office, 1949), 743 pp.

on the actual distribution of men employed at the various levels, but is a compromise between the level of occupational activities actually available to those whose interests are being assessed and the known tendency to choose high level careers. Typical triads, representative of each of the three levels from high to low, are: Triad No. 5 (teacher, architect, chemist), Triad No. 46 (postman, electrician, auctioneer), and Triad No. 38 (busboy, dairy worker, grocery stock boy).

Another situation affecting the balance of items in terms of level is the tendency of some Fields to be made up of occupations with a preponderance of a particular level of occupations. The Scientific Field, for example, consists of a large number of high level occupations, with only a few in the average or low categories. The Natural Field, on the other hand, is composed of a large number of men engaged in low and average level occupations, with relatively few occupations at the high level. This is compounded by the fact that farm owners, who ordinarily would be rated as managers, perform numerous tasks that are low or at most average in level. Thus, it was necessary, in a few cases, to place three pictures in a triad on the basis of relative level within their own respective Fields. Comparative analysis in level might appear, in these few cases, to place one picture at a somewhat higher or lower level than the other two.

An analysis was made of the interaction among the six Fields. As is discussed in the section on Preparation of Scoring Keys, both Like and Dislike responses were counted in scoring the *Inventory*. Therefore, both Like and Dislike responses were used in this analysis. Table 2 shows the number of interactions between each pair of Fields and the average number of interactions of each Field with the other five. Had the items been chosen on face

TABLE 2

ITEM INTERACTIONS BETWEEN FIELDS OF THE PICTURE INTEREST INVENTORY

PART I

FIELD	NUMBER OF INTERACTIONS					
	Natural	Mechanical	Business	Esthetic	Scientific	Mean*
Interpersonal Service	25	30	21	27	21	25
Natural		24	38	26	14	25
Mechanical			23	23	14	23
Business				22	27	26
Esthetic					20	24
Scientific						19

*The average of the five interactions involving each Field of interest rounded to the nearest whole number.

validity and each item keyed singly for only Like responses, the items could have been perfectly balanced. Since the final item choice and the keying of both Like and Dislike responses were based on empirical data, such balance was not to be expected.

As previously stated, the experimental edition of the *Inventory* was arranged so that both the forced-choice method of responding to the triads and the Like-Dislike method of responding to each picture were possible. The *Inventory* was administered twice to a group of high school boys. The boys responded to the triads and then to the single items. The forced-choice administration resulted in normal and usable distributions in each Field. The Like-Dislike response method, however, resulted in extremely varied distributions. Some respondents gave Like responses to from ten to fifteen of the 207 pictures, while others gave Like responses to all but ten or fifteen pictures.

The case for the forced-choice type of response is strengthened by Cronbach[6,7] who has suggested that such answer forms as L-I-D (Like-Indifferent-Dislike) and Yes-No-? give rise to the possibility of obtaining responses unrelated to what the test or inventory is designed to measure. This is due to what he calls "response set" (a bias or tendency to react in a predisposed manner). He states that such "sets" reduce test validity by introducing extraneous variance. He reports that the effect of "sets" can be minimized by the use of presentations requiring a choice between alternative responses, thus increasing item validity. The findings reported above strongly support his conclusions.

These considerations resulted in the decision not to use the Like-Dislike response method as the method of administration in Part I, which is the major portion of the *Inventory*.

The decision to adopt a forced-choice method using three alternative responses rather than the forced-choice method utilizing two alternative responses was primarily based on item utility. With the former method, the examinee makes two responses, a Like and a Dislike, to each set of three pictures, while with the latter, he makes one response, a Like, to two pictures. In the PII, where one page contains only nine pictures, the number of discriminating and valid responses that can be made to each page is an important practical consideration.

While the reasons listed above were decisive enough to favor the use of the forced-choice response method with the 159 pictures found in Part I of the *Inventory*, there are some considerations that prompted the use of the Like-Dislike response method with the thirty pictures in Part II.[8]

These thirty pictures were taken from Part I and were chosen so as to include five pictures from each Field, representing different occupational levels within each Field.

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[6] Lee J. Cronbach, "Response Sets and Test Validity," *Educational and Psychological Measurement*, 6:475-93, Winter, 1946.

[7] _____, "Further Evidence on Response Sets and Test Designs," *Educational and Psychological Measurement*, 10:3-31, Spring, 1950.

[8] One of the original purposes of Part II was to determine if a general quality of breadth or range of interest might not be related to scores on separately rated pictures. Studies, to date, have not shown that meaningful traits or qualities are revealed by differences in total number of Like and Dislike responses to the Part II items. However, great differences have been noted. A few students will state a liking for only two or three pictures while others will make L responses to nearly all of them.

Reasons for including Part II of the *Inventory* are: (1) The forced-choice response pattern can be a source of frustration if the examinee finds many items in which he likes two or even three pictures, or, conversely, dislikes two or all three. The last thirty items enable him to finish the *Inventory* undisturbed by this situation. (2) The individually rated items permit an independent rather than a comparative confirmation or verification of interests.

Before adding the repeated pictures in Part II to those of Part I, a careful analysis was made of the responses given by 154 high school boys to make sure that the homogeneity of the Fields would not be markedly decreased. Mean scores in each Field on Part I were computed for six groups that were formed on the basis of the number of Like responses, from zero to five, made to the five pictures that corresponded to that Field in Part II. Table 3 shows an almost perfect progression in size of means on Part I scores for those making each of the six possible choices on Part II. There is only one instance in which the progression

TABLE 3

PART 1 MEAN SCORES FOR GROUPS CHOOSING 0-5 PICTURES IN EACH FIELD IN PART II*

FIELD	PART 1 MEAN SCORE						
	Number of Like Responses per Field, Part II						Total Mean
	0	1	2	3	4	5	
Interpersonal Service	11.2	13.9	17.0	17.2	19.4	22.9	15.8
Natural	14.2	17.0	24.0	29.3	34.5	37.9	25.6
Mechanical	15.3	19.4	21.4	22.3	23.7	26.5	21.4
Business	12.9	17.2	19.6	24.1	26.5	32.4	20.3
Esthetic	13.0	13.1	14.9	16.9	20.2	21.3	15.6
Science	12.5	14.5	16.4	19.2	24.6	21.5	18.3

*Number of cases = 154.

of means reverses. This is in the Science Field, where the students choosing four pictures in Part II have a higher mean score than those choosing five pictures. Even in this instance, the coefficient of correlation of Science, Part I, vs. Science, Parts I and II combined, was .99.

PREPARATION OF SCORING KEYS

All pictures of the *Picture Interest Inventory* were originally chosen for their face validity. They were retained because the Like responses made to each picture stood up in the item studies previously mentioned. These item studies revealed that numerous pictures served more than one Field. For example, a picture of a farm hand shocking grain, which has obvious face validity in the Natural Field, was found, by statistical analysis, to discriminate positively between examinees with high and low interests in the Science Field. Thus, the Like responses of 36 pictures are keyed for two Fields.

The ability of the Dislike responses to discriminate between the examinees with high and low interests in each Field was also determined. The picture of the farm hand just mentioned, for example, was rejected to a significantly greater degree by the twenty-seven per cent with high scores than by the twenty-seven per cent with low scores in the Business Field. Similarly, each Dislike response was keyed for the Field that rejected the picture most vigorously.

Before final scoring keys were prepared, an experiment was conducted to determine the relationship between the scores received from Like and from Dislike responses in each Field. The *Inventory* results from fifty twelfth-grade boys randomly selected from a large suburban high school were scored. The scores obtained from the Like responses for each Field and those obtained from the Dislike responses to pictures positively keyed for other Fields served as the basis for the study. Table 4 presents the coefficients of correlation between these Like and Dislike keys. The magnitude of the coefficients indicates that both choices contribute to the differentiation of the six interests.

TABLE 4

COEFFICIENTS OF CORRELATION BETWEEN SCORES FROM LIKE AND DISLIKE RESPONSES FOR EACH OF THE SIX OCCUPATIONAL FIELDS ON THE PICTURE INTEREST INVENTORY

FIELD	LIKES*		COEFFICIENT	DISLIKES*	
	Mean	S.D.		Mean	S.D.
Interpersonal Service	11.6	5.49	.71	6.0	3.00
Natural	15.3	8.86	.82	14.7	6.15
Mechanical	14.7	6.37	.67	9.2	2.71
Business	11.1	7.43	.73	10.3	5.87
Esthetic	11.2	6.07	.56	6.4	2.84
Science	13.8	5.45	.54	7.4	2.98

*Scores on Part I only.

The Like and Dislike scores from Part I for each of the six Fields were then supplemented by the five possible scores for each Field in Part II. Table 5 shows the distribution of keyed items in each of the six Fields. It also gives the distribution of keyed items for the Supplemental Scales. The preparation and validity studies of these Scales are discussed in the paragraphs that follow.

The three Scales designed to supplement the measurement of occupational interest were prepared by selecting those items which significantly discriminated between criterion groups for the respective Scales. These criterion groups were selected by the same procedure for the Verbal and Computational Scales, and by a different procedure for the Time Perspective Scale. The discussion is therefore presented in two phases.

TABLE 5

DISTRIBUTIONS OF KEYED ITEMS OF THE PICTURE INTEREST INVENTORY

COMPONENT	NUMBER OF PICTURES*		NUMBER OF KEYED ITEMS				
			Part I		Part II		Total
	Part I	Part II	Likes	Dislikes	Likes	Dislikes	
Interpersonal Service	26	5	34	21	5	0	60
Natural	27	5	32	40	5	0	77
Mechanical	26	5	33	22	5	0	60
Business	26	5	32	34	5	0	71
Esthetic	23	5	35	21	5	0	61
Scientific	22	5	28	21	5	0	54
Verbal	—	—	10	12	3	3	28
Computational	—	—	12	11	3	4	30
Time Perspective	—	—	6	9	3	4	22
TOTAL	150	30	222	191	39	11	463

*The nine recreational pictures are not included in this column. Their keyed values are included under "Number of Keyed Items, Part I."

Verbal and Computational. The selection of two criterion groups (Highs and Lows) was made from 100 twelfth-grade boys in three high schools located in Texas, California, and Virginia. The high and low scoring twenty-seven per cent on the Verbal and Computational Scales on the *Occupational Interest Inventory* were the criterion groups from which the PII items were subjected to item analysis. Because of the differences in methods of responding, Parts I and II of the PII were treated separately. Because each item in Part I has three response possibilities (Like, Dislike, Neither) a three by two table resulted for each triad of items. A test of the null hypothesis which stated that Like and Dislike frequencies in the two groups were due to chance established the limits of confidence with which each distribution could be considered due to other than chance factors. Only those items in which a chance distribution could be rejected at the 10 per cent level or better (5%, 1% and .01%) were retained for a key. As the Chi-square test does not indicate which of the three response possibilities is contributing to the rejection of the null hypothesis, it was necessary to place each item subjectively on either a Like or a Dislike key. In most cases it was clearly evident whether it was the Low or the High group which contributed most to the value of Chi-square. Items in Part II were also treated by Chi-square, using two by two tables. Therefore, all scales contain both Like and Dislike responses, and keyed items occur in both parts of the instrument.

The two Scales were then applied to a new sample of one-hundred eighty-two eleventh and twelfth grade boys. Intercorrelations among the Supplemental Scale scores were calculated. These coefficients were suspiciously high.

Each item response keyed to each of the two Scales was analyzed as to type (Like or Dislike) and Field. This analysis revealed a choice pattern that explained how such keys were operating. Individuals who preferred Natural pictures received low scores in both Scales and those rejecting this Field received high scores in these Scales. Thus, there was strong evidence that it was the high agreement on Disliked Natural items or the high agreement of those low in Verbal and Computational interests having high interest in Natural pictures that was resulting in the Verbal and Computational Scales being so very similar. Although not illogical or unreasonable, it obscured differences between them.

To remove the overriding effect of this gross division between Natural versus all non-natural interests, all responses to Natural items were omitted from these scales. Their elimination increases the true discriminatory power of the scales. The Table of Intercorrelations (Table 12) reflects the present inter-relationships as finally developed from an analysis of 394 cases.

Time Perspective. This scale was developed as part of a comprehensive study of the psychological significance of time in which the theoretical basis and frame of reference for the Time Perspective Scale is presented.[9] For this scale, criterion groups were obtained by means of a rating scale in which the personality characteristic rated ranged from very immediate to very remote time perspectives. This Scale was applied and the PII was administered to 143 twelfth-grade boys in four schools representing both agricultural and industrial populations. Criteria for selecting these particular schools were that the school population be small and the community relatively stable with respect to the composition of the school population. This kind of a school situation was preferred because of the greater likelihood that teacher-raters would have had frequent contacts with the boys over a three-year period and hence, greater opportunities for observing them. Ratings by four teachers were obtained for each subject.

From this point, the general development of this Scale was similar to that used in the selection of the Verbal and Computational items. Item analysis of the PII items based on high and low criterion groups were followed by Chi-square analysis. On the basis of these data the first Time Perspective key was produced.

[9] Wayne E. Rosenoff, "An Analysis of Time Perspective Theories as they Relate to Educational Planning," (unpublished Doctor's dissertation, The University of California, Los Angeles, 1957), 197 pp.

Means and variances were calculated for the Scale scores on the three groups of papers (rated High, Middle, and Low). Table 6 contains the result of the t-test for the significance of the three group mean differences. Two of the differences

TABLE 6

TESTS OF SIGNIFICANCE OF DIFFERENCES BETWEEN MEANS AND RELATED DATA IN TIME PERSPECTIVE SCORES OF HIGH, MIDDLE, AND LOW RATED GROUPS OF 12TH-GRADE BOYS

RATED GROUP	N	TEST OF SIGNIFICANCE (Probability / t-Value)			TIME PERSPECTIVE DATA	
		High	Middle	Low	Mean	S.D.
High	50		2.13	5.26	14.54	5.7
Middle	43	<.05		2.94	12.09	5.4
Low	50	<.01	<.01		8.92	5.0

were significant beyond the one per cent level of confidence and the third, the difference between the mean of the high and the middle groups, was significant at the five per cent level of confidence. The influence of the Natural keyed items were removed in similar treatment as in the Verbal and Computational Scales after these data were prepared. Hence, the thirty-four items were later reduced to twenty-two.

From the user's point of view, the results of a cross-validation study of this new Scale are likely to be of equal interest to the original developmental techniques. One procedure can be reported. A check-list containing short, descriptive phrases was developed among which were seven designed to measure the quality of Time Perspective. If the characteristic under consideration placed the subject in the highest or lowest 15% of those known to the rater, a check was made in the "Very Typical" or "Very Atypical" column. Other columns were provided for "Average" and "Unknown" responses. Independent ratings by two teachers were obtained in each of three schools. A total of 135 boys who had previously taken the PII were rated. Table 7 presents the results of the correlations between the newly developed Time Perspective Scale and the ratings. There was a time lapse of eleven months between testing and rating. Under the circumstances, and considering the fallibility of such a criterion, the correlations of scores and ratings appear to be of a high order, and support the validity of the Scale.

TABLE 7

COEFFICIENTS OF CORRELATION AND RELATED DATA FOR THE TIME PERSPECTIVE SCALE VS. TEACHERS' RATINGS

SOURCE*	N	TIME PERSPECTIVE DATA		COEFFICIENT	TEACHER RATING DATA	
		Mean	S.D.		Mean	S.D.
School A	34	7.8	3.2	.49	41.4	20.0
School B	62	7.5	3.5	.44	42.5	21.1
School C	39	8.3	3.0	.26	47.9	24.5
TOTAL	135	7.8	3.3	.40	43.8	22.0

*School A is a small-town high school in Oklahoma; School B is located in a suburb of a large industrial city in Southern California; School C is located in an industrial city also serving an agricultural area in Central California.

CONCURRENT VALIDITY

The Vocational Interest Blank for Men[10] and the *Picture Interest Inventory* were administered to fifty-two male freshman at two major universities during the 1956-1957 school year. Coefficients of correlations were computed between the raw scores of the *Picture Interest Inventory* and the standard scores of selected keys of the *Strong Blank*. These data are presented in Table 8.

The following criteria were used to determine which *Strong Blank-Picture Interest Inventory* relationships to show: (1) Coefficients of correlation were computed when the relationship appeared, by inspection, to be definitely positive; (2) coefficients were computed when the relationships appeared to be definitely negative; and (3) coefficients were computed for each *Picture Interest Inventory* variable and a representative number of occupations in the corresponding Strong Groups. For example, coefficients of correlation were computed between all occupations in the two Strong Business Groups, VIII and IX, and the PII Business Field.

The Interpersonal Service Field was expected to show a high relationship with the personal contact occupations of the *Strong Blank*. These occupations are found in Groups V, IX, and X. The Social Service occupations of Group V produced the highest coefficients of correlation, although the other two groups also produced significantly high coefficients. All five occupations listed in Group V registered correlations ranging from .46 to .61. The personal contact occupations of Real Estate Salesman, Life Insurance Salesman, and Advertising Man had coefficients of .38, .53, and .40, respectively. As one would expect, the representative occupations of Groups II, III, IV, and VII showed definitely negative coefficients.

The Natural Field should be most closely related to the occupations found in Strong's Group IV. The coefficients range from .45 and .77 for Farmer and Forest Service Man to .28 and .31 for Carpenter and Policeman. All other coefficients are negative or low positive.

One would expect the Engineer, the Carpenter, the Production Manager, and the Chemist keys to have high coefficients of correlation with the Mechanical Field. The magnitude of the four coefficients, .49 to .60, indicates that this expected relationship does exist. The occupations in Group I also produced positive, although lower, coefficients. All other relationships are negligible or negative.

Groups VII, VIII, and IX include the Strong occupations associated with business. All the occu-

[10] Edward K. Strong, Jr., *Vocational Interest Blank for Men* (Stanford: Stanford University Press, 1938).

TABLE 8

COEFFICIENTS OF CORRELATION AND RELATED DATA FOR THE VOCATIONAL INTEREST BLANK FOR MEN VS. THE PICTURE INTEREST INVENTORY

	STRONG VOCATIONAL INTEREST BLANK	PICTURE INTEREST INVENTORY									
		Interpersonal Service	Natural	Mechanical	Business	Esthetic	Scientific	Verbal	Computational	Time Perspective	Mean (Standard Scores)
I	Artist					.28*			—.40†		27
	Architect		.11			.13	.53†				29
	Physician	—.03		.30*	—.57†		.63†	—.60†	—.49†	—.22	30
	Osteopath			.19	—.60†	—.27*	.33*		—.53†		29
	Dentist			.39†			.67†	—.64†			25
II	Engineer	—.59†		.60†		- .29*	.63†	—.69†		—.01	32
	Chemist		.17	.49†	—.28*		.74†	—.58†	—.11	.04	32
III	Production Manager	—.50†		.50†						.06	32
IV	Farmer	—.24	.45†		—.53†			—.73†			35
	Carpenter		.28*	.52†		—.33*					26
	Policeman		.31*								30
	Forest Service Man		.77†		—.62†		.26	—.66†	—.50†	—.59†	22
V	Social Worker	.61†									34
	YMCA Secretary	.49†					—.29*				29
	Soc. Sci. H.S. Teacher	.59†	.05					.49†			31
	City School Supt.	.58†		—.53†	.20	—.03		.46†		.17	21
	Minister	.46†									22
VI	Musician					.17				—.19	36
VII	C.P.A.	—.29*	—.59†		.54†			.36†	.59†	.65†	32
VIII	Accountant				.49†				.53†		30
	Office Man		—.35†	—.09	.43†			.32*		.00	36
	Purchasing Agent			.07	.48†		—.33*	.16	.59†		30
	Banker				.38†	—.12	—.50†	.31*	.37†		27
IX	Sales Manager		—.35†		.53†			.66†	.42†		32
	Real Estate Salesman	.38†		—.35†	.26		—.66†	.44†	.25		38
	Life Insurance Salesman	.53†		—.54†	.41†	.20	—.63†	.69†	.22	.22	30
X	Advertising Man	.40†		—.89†		.34†	—.39†	.66†	.11	.33*	33
	Lawyer		—.26		.33*			.52†	.19		31
XI	Interest Maturity									—.03	
	Occupational Level									.51†	
	Masculinity-Femininity									—.37†	
	Mean (Raw Scores)	19.1	26.3	21.9	27.8	19.8	20.3	11.4	12.7	10.5	

*Significant at the 5 per cent level of confidence.
†Significant at the 1 per cent level of confidence.

pations in these Groups, with the exception of Real Estate Salesman, have very significant coefficients with the PII Business Field. There is no evidence to indicate that the Business Field scores will distinguish between the Business Detail activities of Group VIII and the Business Contact activities of Group IX. The City School Superintendent and the Lawyer keys also have positive coefficients with the Business Field. All of the other coefficients are negative.

Of all the PII Fields, the Esthetic Field shows the least relationship with the comparable *Strong Blank* occupations. The Artist, Architect, Musical Performer, and Advertising Man all engage in Esthetic pursuits. The correlation coefficients between these four keys and the Esthetic Field are positive but of a relatively low magnitude. Nor are the negative coefficients very decisive.

The Scientific Field scores have highly significant positive coefficients with the occupations in Groups I and II. This is a relationship that one would expect. The positive coefficient with Forest Service Man is also reasonable. All other coefficients are negative and undoubtedly should be.

Most of Strong's occupations that entail much verbal activity are found in Groups V, IX, and X. The coefficients of correlation between these occupations and the Verbal Scale are all significant at the one per cent level of confidence. The occupations in Group IX have coefficients that range from .44 to .69, and the coefficients of the occupations in Groups V and X also fall within the limits of that range. There is no evidence to indicate that the Verbal Scale distinguishes between occupations which involve the use of words for sales and occupations in which words are used to express ideas. The office occupations and CPA also reveal positive relationships with the Verbal Scale. The scientific, mechanical, and trade occupations shown in Groups I, II, and IV produced high negative coefficients.

The occupations in Groups VII and VIII should produce high coefficients with the Computational Scale. The .37 to .59 range bears out this contention. The coefficients of correlation produced with occupations in Groups IX and X were positive. All other relationships were negative. Of the two Business groups, namely, Group VIII, Business Detail, and Group IX, Business Contact, the former has higher coefficients of correlation with the Computational Scale while the latter shows a higher relationship with the Verbal Scale.

The Time Perspective Scale has a very significant relationship with the Occupational Level key of the *Strong Blank*. This becomes apparent when one compares the coefficients of the two scales with the same Strong occupational scales. In his book, Dr. Strong reports the coefficients of correlation for Occupational Level with the other scales in his Blank.[11] For the following Strong scales, the coefficients of correlation with the Occupational Level key are reported, with the corresponding Time Perspective coefficients in parentheses: Physician, .03 (—.22); Engineer, —.20 (—.01); Forest Service Man, —.62 (—.59); City School Superintendent, .10 (.17); C.P.A., .43 (.65); Office Man, —.33 (.00); Life Insurance Salesman, .47 (.22); Advertising Man, .52 (.33); Interest Maturity, —.20 (—.03); and Masculinity-Femininity, —.41 (—.37). This similarity of coefficients, and the coefficient of correlation of .51 between Time Perspective and Occupational Level indicate a very positive relationship.

TABLE 9

COEFFICIENTS OF CORRELATION AND RELATED DATA FOR THE KUDER PREFERENCE RECORD VS. THE PICTURE INTEREST INVENTORY*

COMPONENTS		DATA				
		PII		Coefficient†	Kuder	
PII	Kuder	Mean	S.D.		Mean	S.D.
Interpersonal Service	Persuasive	16.3	7.60	.34	38.7	12.33
Interpersonal Service	Social Service	16.3	7.60	.44	34.3	12.37
Natural	Outdoor	29.3	13.82	.68	45.2	17.05
Natural	Mechanical	29.3	13.82	.30	42.9	12.36
Mechanical	Mechanical	24.7	8.44	.53	42.9	12.36
Business	Computational	21.8	12.56	.28	27.3	8.88
Business	Persuasive	21.8	12.56	.51	38.7	12.33
Business	Clerical	21.8	12.56	.62	46.7	11.34
Esthetic	Artistic	18.3	7.64	.40	26.8	10.57
Esthetic	Literary	18.3	7.64	.14	18.2	8.36
Esthetic	Musical	18.3	7.64	.21	12.2	6.69
Scientific	Scientific	21.8	8.47	.61	45.4	11.63
Verbal	Computational	8.3	4.99	.13	27.3	8.88
Verbal	Persuasive	8.3	4.99	.46	38.7	12.33
Verbal	Literary	8.3	4.99	.33	18.2	8.36
Verbal	Social Service	8.3	4.99	.17	34.3	12.37
Computational	Computational	11.6	5.85	.46	27.3	8.88
Computational	Clerical	11.6	5.85	.67	46.7	11.34

* N = 150 12th-grade boys.
† Calculated by the Pearson product-moment formula.

Table 9 shows the relationship between the *Kuder Preference Record*[12] and the *Picture Interest Inventory*. The Interpersonal Service Field is more closely related to the Social Service Scale than to the Persuasive Scale. This trend was also observed in the *Strong Blank* study. The Natural Field has a very high coefficient with the Outdoor Scale. Its relationship to the Mechanical Scale is appreciably smaller. The coefficients for the two Mechanical and the two Scientific scores are of the magnitude that one would expect. The Business Field exhibits a high relationship with the Persuasive and Clerical Scales. The Esthetic Field is more closely related to the Artistic Scale than it is to the Literary and Musical Scales. The Verbal Scale is most similar to the Persuasive and Literary Scales of the *Preference Record*. While both are very significant, the coefficient produced by the Computational and Clerical Scales is higher than that produced by the two Computational Scales.

The *Picture Interest Inventory* was administered to 418 junior high school boys who also took

11 Edward K. Strong, Jr., *The Vocational Interests of Men and Women* (Stanford: Stanford University Press, 1943), pp. 324-25.

12 G. Frederick Kuder, *Kuder Preference Record, Form B 1* (Chicago: Science Research Associates, 1948).

ıe *Occupational Interest Inventory, Intermedi-*
te,[13] and to 253 high school boys who took the *Occupational Interest Inventory, Advanced.* Tables) and 11 present the coefficients of correlation ıd related data for the corresponding scales of ıe PII and the two OII inventories. All coefficients :e very satisfying, with a range of .56 to .77 in able 10 and of .61 to .95 in Table 11. It is evident

TABLE 10

COEFFICIENTS OF CORRELATION AND RELATED DATA FOR THE OCCUPATIONAL INTEREST INVENTORY, INTERMEDIATE VS. THE PICTURE INTEREST INVENTORY*

COMPONENTS		DATA				
		PII		Coefficient†	OII	
PII	OII	Mean	S.D.		Mean	S.D.
terpersonal	Personal-Social	18.1	6.8	.56	18.0	5.4
ıtural	Natural	26.7	13.7	.77	19.9	7.2
echanical	Mechanical	23.6	7.4	.69	22.1	6.2
siness	Business	24.9	12.6	.71	19.9	6.1
thetic	The Arts	17.4	6.9	.61	16.7	5.5
ientific	The Sciences	20.4	7.6	.67	22.4	6.3
rbal	Verbal	9.5	4.7	.70	12.8	5.5
mputational	Computational	12.8	5.3	.59	12.3	5.0

I = 418 cases.
Calculated by the Pearson product-moment formula.

at the *Picture Interest Inventory* is more closely lated to the Advanced than to the Intermediate vel of the OII. The means and standard devi-ions of each scale for the two *Picture Interest ventory* samples are very similar.

The intercorrelation matrix for the PII is pre-nted in Table 12. The six Fields, which constitute e first six components on the table, have a rge proportion of forced-choice items. This means at an especially high score in one field results lowered scores in the other five. This has the

[13] Edwin A. Lee and Louis P. Thorpe, *Occupational Interest In-ntory* (Los Angeles: California Test Bureau, 1956).

TABLE 11

COEFFICIENTS OF CORRELATION AND RELATED DATA FOR THE OCCUPATIONAL INTEREST INVENTORY, ADVANCED VS. THE PICTURE INTEREST INVENTORY*

COMPONENTS		DATA				
		PII		Coefficient†	OII	
PII	OII	Mean	S.D.		Mean	S.D.
Interpersonal Service	Personal-Social	16.3	6.5	.61	14.7	5.6
Natural	Natural	26.4	12.1	.95	21.3	8.5
Mechanical	Mechanical	25.5	7.4	.66	23.1	6.0
Business	Business	24.4	12.8	.77	20.2	7.8
Esthetic	The Arts	18.0	6.9	.63	15.8	6.3
Scientific	The Sciences	20.2	8.1	.74	24.0	6.9
Verbal	Verbal	9.0	4.7	.65	10.7	5.8
Computational	Computational	12.8	5.7	.81	15.8	5.7

*N = 253 cases.
†Calculated by the Pearson product-moment formula.

effect of producing lower positive and higher negative coefficients of correlation than would result if the responses to each Field were independent of responses to the other Fields.

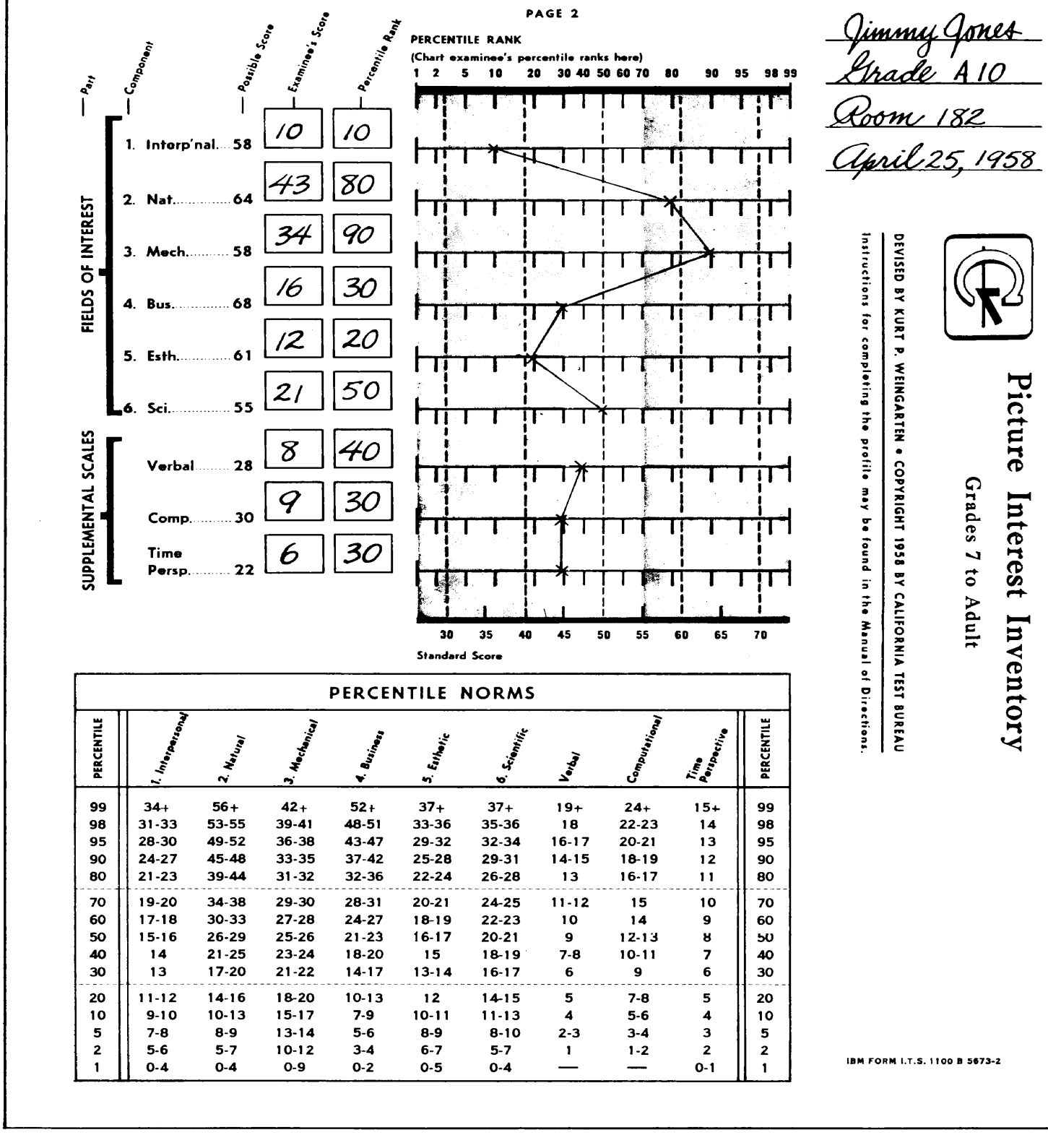
A study of Table 12 reveals two interrelated groups of three Fields each. The three Fields that form the one group are the Interpersonal Service, Business, and Esthetic Fields. The intercorrelations of these three are .32, .09, and .16. The other three, which are Natural, Mechanical, and Scientific have intercorrelations of .23, —.05, and —.01. These coefficients of correlation become more meaningful when the nine coefficients that result when each of the three Fields in one group is compared with each of the three Fields in the other group. These coefficients range from +.02 to —.77 with a median of —.25. The difference between the two groups of Fields is further pointed up by the coefficients of correlation between each of the six Fields and the Verbal Scale. The Natural-Mechanical-Scientific group have coefficients of —.51, —57, and —.30 with Verbal while the other three Fields (Interpersonal Service, Business, and Esthetic) produce coefficients of .60, .73, and .24, respectively.

TABLE 12

INTERCORRELATION MATRIX FOR THE PICTURE INTEREST INVENTORY*

COMPONENT	COMPONENT								MEAN	STANDARD DEVIATION
	Natural	Mechanical	Business	Esthetic	Scientific	Verbal	Computational	Time Perspective		
terpersonal Service	—.25	—.55	.32	.09	—.25	.60	.26	.25	16.9	6.5
ıtural		—.01	—.77	—.36	—.05	—.51	—.66	—.46	30.0	13.3
echanical			—.22	.02	.23	—.57	—.11	—.20	24.9	7.7
siness				.16	—.13	.73	.81	.47	21.0	11.1
thetic					—.35	.24	—.16	—.08	18.3	7.0
ientific						—.30	.15	.32	19.6	7.7
rbal							.59	.60	8.5	4.4
mputational								.45	11.2	5.1
me Perspective									7.1	3.1

Number of cases = 394 boys in Grades 8-12.



PERCENTILE NORMS

PERCENTILE	1. Interpersonal	2. Natural	3. Mechanical	4. Business	5. Esthetic	6. Scientific	Verbal	Computational	Time Perspective	PERCENTILE
99	34+	56+	42+	52+	37+	37+	19+	24+	15+	99
98	31-33	53-55	39-41	48-51	33-36	35-36	18	22-23	14	98
95	28-30	49-52	36-38	43-47	29-32	32-34	16-17	20-21	13	95
90	24-27	45-48	33-35	37-42	25-28	29-31	14-15	18-19	12	90
80	21-23	39-44	31-32	32-36	22-24	26-28	13	16-17	11	80
70	19-20	34-38	29-30	28-31	20-21	24-25	11-12	15	10	70
60	17-18	30-33	27-28	24-27	18-19	22-23	10	14	9	60
50	15-16	26-29	25-26	21-23	16-17	20-21	9	12-13	8	50
40	14	21-25	23-24	18-20	15	18-19	7-8	10-11	7	40
30	13	17-20	21-22	14-17	13-14	16-17	6	9	6	30
20	11-12	14-16	18-20	10-13	12	14-15	5	7-8	5	20
10	9-10	10-13	15-17	7-9	10-11	11-13	4	5-6	4	10
5	7-8	8-9	13-14	5-6	8-9	8-10	2-3	3-4	3	5
2	5-6	5-7	10-12	3-4	6-7	5-7	1	1-2	2	2
1	0-4	0-4	0-9	0-2	0-5	0-4	—	—	0-1	1

FIG. 1. Sample Answer Sheet Profile, *Picture Interest Inventory.*

PART 2

The Individual Profile
Uses of In[redacted]tory Results

Picture Interest Inventory

The contribution that an inventory of vocational interest makes to the solution of problems of young people as they move toward maturity in the relatively unrestricted American social structure is widely recognized. The American Personnel and Guidance Association has reaffirmed the principle that freedom to choose one's life work is basic to our democratic society and is necessary to the fullest possible growth of individuals. In order for freedom to flourish, students must learn "progressively more about themselves — their interests, talents, values, and abilities — through assistance in interpreting test results, educational experiences, and personality potentials."[1]

As a counseling tool the *Picture Interest Inventory* helps to organize the myriad occupational and vocational attitudes, preferences and opinions, differently patterned for each individual, into a meaningful form. The understanding of self in relation to the world of work into which young men and women will enter at completion of school life is one of the major objectives of our educational processes and systems. Awareness of fields in which interests are high, or low, or neither, is of great value in the eventual choice or rejection. This assessment of interests by means of pictures lends itself very well to both group and individual counseling situations.

THE INDIVIDUAL PROFILE

The interpretation of the results is simplified by the use of the profile form found on the back of each answer sheet and presented in a sample on page 14. The following section contains a discussion of the procedures for recording data on the profile, and of the interpretation of these data. Subsequent sections present ways in which this instrument can be used in furthering guidance and counseling objectives relating to the use of information of occupational significance.

PREPARATION OF THE PROFILE

Profiles are presented on the reverse side of the machine-scoring answer sheet. Their purpose and function is, of course, to summarize graphically and conveniently the data to be interpreted. There are three steps to follow in the preparation of the profile:

1. Transfer all of the raw scores which the examinee has received for both Field and Supplemental Scales to the boxes in the column headed "Examinee's Score." Transfer is facilitated when the answer sheet is folded over vertically to the line of these score spaces, as the two sides have corresponding spacing.
2. The percentile scale value for each of the raw scores is found either in the space below the profile or in Part 4 of this Manual. Convert each score into its corresponding percentile rank and enter these ranks in the column headed "Percentile Rank."
3. Mark the point which corresponds to the examinee's percentile rank on each horizontal line. Draw lines connecting the six Fields of Interests and the three Supplemental Scales.

At the bottom of the profile may be found a standard score scale. Inspection of this in relation to the examinee's achieved percentile ranks as marked on the profile will give the approximate relationship between his percentile ranks and standard scores. For those who are interested, or whose cumulative records have a standard score profile, more exact relationships of the percentile ranks to standard scores are presented in Table 15, page 23.

INTERPRETATION OF THE PROFILE

The profile graphically indicates the interest pattern for each examinee. Fields in which interest exceeds the seventieth percentile are considered first because of their direct significance. Fields in which interests are lower than the thirtieth percentile are also important. After the pattern of highs and lows has been identified, examination of the Supplemental Scales will give further information regarding occupational interest. Their interpretation will depend considerably upon the specific Fields which have been identified. Counselor familiarity with requirements in the many occupations will normally be called upon at this point. This knowledge can be used to initiate any number of exploratory and information-gathering activities by the counselee. Listings of occupations requiring various combinations of factors are available. One of these is the *Occupational Selection Aid. Part II.*[2]

THE SAMPLE PROFILE

A sample profile is presented to illustrate in a specific way how an interest pattern may be used in the counseling and guidance process. It should

[1] American Personnel and Guidance Association, "A Statement of Policy Concerning the Nation's Human Resources Problems," *The Personnel and Guidance Journal*, 36:454-55, March, 1958.

[2] William Fauquier and Harry E. Shierson, *Occupational Selection, Aid, Part II* (Los Angeles: California Test Bureau, 1947), 32 pp.

be self-evident that interest as revealed in an inventory is but one of many factors that enter into selection. The importance to be attached to these other factors will vary in each individual situation and must be weighed together. Both external and personal qualities are involved. Opportunities for training and later employment must be assessed, together with abilities and skills, health, and other physical and temperament factors.

For illustrative purposes, the profile of Jimmy Jones shows that he is a boy who likes activities in two Fields, Mechanical and Natural, and lacks interest for activities in the Esthetic and Interpersonal Fields. Scores in Business (low average), Science (average), do not suggest interests in these Fields. Supplemental Scale scores are all low or average, and in this case, support the Field scores, which a not notably demanding in these qualities of inte ests, and do not usually accompany Jimmy's hi interests pattern.

Activities which fall under the heading of Nat ral are very well known, including all kinds agriculture and agricultural support occupatior Coupled with high interests in Mechanical, whi would, of course, be needed for today's large mechanized farming methods, are such positions maintenance and repair of farm machinery, po tions in the trucking or transportation industrie occupations supporting the recreational activiti of hunting and fishing, and the many mechanic activities associated with the oil, aircraft, shippin and lumbering industries.

USES OF INVENTORY RESULTS

USE IN GUIDANCE AND EVALUATION PROGRAMS

In conjunction with assessment, and as a supplemetary activity, the pictures presented in the *Picture Interest Inventory* can be utilized in occupational information courses or projects. They provide a good starting point for gathering occupational information, and for discussion of various types of work situations.

The information revealed by school-wide assessment of occupational interest can most profitably be used in curriculum planning, in examining educational objectives relating to occupational and vocational preparation and adjustment, and relating the school program to community needs and interests as reflected in such results.

Throughout the discussion to this point, heavy emphasis has not been made of the utility and applicability of the PII at grades 7, 8, and 9, although these have been implied. Earlier, it has been emphasized that the problem of readability is one which has made assessment of interests somewhat difficult at grade levels below high school. In the absence of such restrictions, assessment of interest at Junior High School grade levels is entirely practical. In a randomly-conducted survey of the technical staff of a large aircraft company located on the west coast and engaged almost wholly in advanced research on military projects some very interesting results have been reported.[3] Of 185 respondees to a company developed questionnaire, 118 (63.7%) indicated that their company's efforts to influence students to pursue an Engineering curriculum should be directed to students in the Elementary and Junior High Schools. In another question, it is interesting to note that 118 respondees indicated that their own interests had been directed toward the fields of Engineering and Science in those same years. If what this report indicates is the correct placement of effort to influence students in one caree the implications seems clear. Not only should or field of occupational activity be discussed in deta but certainly many others should also be pr sented. Further, if large proportions of students a influenced toward a career before entering Hig School, it is obviously important that vocation guidance and career counseling be stressed durin this formative period.

SPECIAL USES

Because the examinee has no words to read either obtaining his instructions or in reacting the items of the *Inventory*, a number of special use can be suggested. Whenever the examinee ha little or no knowledge of English or wherever lo reading ability may seriously interfere with asses ment, this inventory is ideally suitable. Amon such groups there is a marked preference an noticeably greater enthusiasm for responding items in picture form.

SEX DIFFERENCES IN PICTURE INVENTORY INTERESTS

There will be many instances in which th *Picture Interest Inventory* is administered to gir as well as boys. There may be some questior raised relative to the appropriateness of the *Inve tory* for girls, since all of the illustrations depi male workers. An experiment was conducted determine the comparability of male and fema scores on the *Inventory* as well as the usabili of the *Inventory* with girls. The *Picture Intere Inventory* was administered to boys and girls four eighth-grade and four twelfth-grade classe The means and standard deviations for the nin components of the *Inventory* are reported for th four samples in Table 13. The comparative resul of these data are extremely similar to those repor ed for a similar comparison based on *Occupation Interest Inventory data*.[4] This would tend to ind cate that girls can respond realistically to the ma illustrations in the *Picture Interest Inventory*.

[3] Results reported by Justin Johnson in the April, 1958 Newsletter, N V G A, Los Angeles Branch.

[4] Edwin A. Lee and Louis P. Thorpe, *Manual of Directions, Occ pational Interest Inventory, Advanced, 1956 Revision* (Los Angel California Test Bureau, 1956), p. 25.

TABLE 13

OMPARATIVE MEAN SCORES AND STANDARD DEVIATIONS ON THE PICTURE INTEREST INVENTORY FOR BOYS AND GIRLS

)MPONENT	GIRLS				BOYS			
	12th Grade		8th Grade		12th Grade		8th Grade	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
:rpersonal ervice	26.8	6.4	28.3	5.9	14.9	6.2	18.1	5.2
ural	22.7	13.8	16.7	9.2	29.9	12.2	30.9	13.6
chanical	10.6	4.9	10.2	5.0	26.8	8.1	23.2	6.9
iness	34.8	13.7	36.3	10.6	19.8	10.5	20.9	10.5
hetic	20.2	6.7	24.0	6.7	20.9	7.8	18.3	6.9
ntific	14.8	7.5	14.5	7.0	19.9	6.7	19.0	7.1
bal	16.3	5.5	17.0	3.9	8.2	4.4	8.8	4.0
nputational	15.2	5.4	15.1	5.4	10.6	4.9	10.7	5.1
ie Perspective	10.2	2.2	10.9	2.1	7.1	2.7	6.6	2.9
mber of Cases	66		74		85		80	

Table 13 reveals that despite variation beeen grade levels, the girls had significantly higher averages in the Interpersonal Service and Business Fields, and much lower averages in Natural, Mechanical and Scientific Fields. Scores in the Esthetic Field were not significantly different for the two twelfth-grade groups. The eighth-grade girls scored considerably higher than the boys in the Esthetic Field. Girls scored higher than boys in all three of the Supplemental Scales.

The data for girls, presented in Table 14, are based on 140 cases. These girls took both the *Picture Interest Inventory* and the *Occupational Interest Inventory*. In the preparation of the percentiles and standard score values, the *Picture Interest Inventory* distributions were anchored to the *Occupational Interest Inventory* norms for females.

While percentile data are available for girls (Table 14), there will be times when girls' scores may be interpreted in terms of the norms for boys. The composition of the labor market is constantly changing. One of the major shifts of the last decade or two has been the influx of women into positions formerly held only by men. Therefore, girls' scores can be related meaningfully to the boys' norms (Table 16) to show relative interests in fields in which male predominance is marked.

TABLE 14

STANDARD SCORE AND PERCENTILE DATA FOR FEMALES — PICTURE INTEREST INVENTORY

ANDARD SCORE	PER-CENTILE	FIELD OF INTEREST						SUPPLEMENTAL SCALE			PER-CENTILE	STANDARD SCORE
		Inter-personal Service	Natural	Mechan-ical	Business	Esthetic	Scientific	Verbal	Compu-tational	Time Perspective		
73	99	60	57+	36+	68+	52+	39+	28	27+	17	99	73
71	98	56-59	51-56	34-35	65-67	49-51	36-38	26-27	25-26	16	98	71
67	95	48-55	42-50	30-33	59-64	43-48	31-35	24-25	23-24	15	95	67
63	90	42-47	35-41	27-29	52-58	38-42	27-30	22-23	22	14	90	63
58	80	36-41	29-34	24-26	46-51	34-37	24-26	21	20-21	13	80	58
55	70	32-35	24-28	22-23	40-45	31-33	21-23	20	18-19	12	70	55
53	60	29-31	21-23	20-21	35-39	28-30	19-20	18-19	17	11	60	53
50	50	26-28	18-20	18-19	31-34	25-27	16-18	17	16	11	50	50
47	40	23-25	15-17	16-17	26-30	22-24	14-15	16	14-15	10	40	47
45	30	20-22	12-14	14-15	21-25	18-21	11-13	14-15	12-13	10	30	45
42	20	16-19	8-11	11-13	15-20	14-17	8-10	12-13	10-11	9	20	42
37	10	13-15	5-7	7-10	9-14	9-13	5-7	10-11	7-9	8	10	37
33	5	10-12	3-4	4-6	6-8	4-8	3-4	8-9	4-6	7	5	33
29	2	8-9	2	2-3	4-5	2-3	2	7	2-3	6	2	29
27	1	0-7	0-1	0-1	0-3	0-1	0-1	0-6	0-1	0-5	1	27

EXAMINER'S NOTES

PART 3

Directions for Administration

'icture Interest Inventory

ENERAL INSTRUCTIONS TO THE EXAMINER

The *Picture Interest Inventory* is designed to easure occupational preferences by non-verbal eans. It has two parts. For Part I, the examinee dicates for each triad which one of the three he efers (L) and which one he likes least (D). The ctures in Part II are rated individually, either like or dislike (L or D). The two Parts are administered as a unit.

There is no time limit. All examinees should be permitted and encouraged to respond to all of the items. Thirty to forty minutes will ordinarily be sufficient for administration.

RECTIONS FOR ADMINISTRATION

JGGESTED TIME ALLOTMENT: 30-40 minutes.

ATERIALS REQUIRED:

For each examinee —

- 1 test booklet — *Picture Interest Inventory*
- 1 IBM machine-scoring answer sheet No. 5153
- 1 electrographic pencil with eraser attached (An ordinary lead pencil with attached eraser is adequate if answer sheets are not to be scored with an IBM test-scoring machine.)
- 1 eraser, if not attached to pencil

In addition, for the examiner —

- extra pencils
- extra erasers
- extra copy of *Picture Interest Inventory* booklet and answer sheet for demonstration purposes, if necessary

Assistance to students in recording identifying ata can be given by preparing a chalkboard odel of the part on the answer sheet in which the ata are to be written. Complete the name of hool, grade, examiner, city, etc., as they apply your group. Note the parentheses in the "Examer" space on the second line. They are provided r examiners who wish examinees to indicate their ction, class, department, etc., in order to facilitate e handling of data and answer sheets after they ve been scored.

From this point on, certain parts of these directons are printed **in this different type face** and preded by SAY:. These parts are to be read to xaminees.

AY: **Look at the part of your answer sheet that has spaces for name, grade, school, etc.** (Demonstrate with your copy.) **Write in all of the information that is called for.** (Refer to chalkboard model if it is available.)

Now look at the "Instructions to Examinees" on the front cover of your booklet and read them silently while I read them aloud. They are: "Here are some pictures for you to judge. Your responses will help to identify your occupational likes and dislikes. Do not consider how much you would earn, how much training would be necessary, nor what others may think of the activity. This is not a test, so there are no 'right' or 'wrong' answers. Do not write on this booklet. Mark all of your answers on the answer sheet."

Now open your booklet to page 2. Look at the three pictures in row 1, marked a, b, and c. (Demonstrate with your copy.) **Now look at your answer sheet. The number 1 to the left of the first bracket corresponds to the number of the first row of pictures in your booklet; the letters a, b, and c inside the bracket correspond to the letters of the three pictures in the number 1 row. You are to study these three pictures in your booklet and decide which of the activities pictured you would most *like* to do. Note the letter of that picture and, on your answer sheet, opposite the letter you have chosen, make a heavy, black mark between the dotted lines marked L (which stands for *like*). Now look back at the pictures in your booklet, and decide which you like least. Note its letter, and make a heavy, black mark between the dotted lines marked D (for *dislike*) opposite it. This is the way you will mark each row of pictures until you have completed Part I of the test.**

Remember that you must choose between the three pictured activities each time. If none of the three appeals to you, mark the one you dislike the least under L, and the one you dislike most under D. If you like all three, mark the one you like most under L and the one you like least under D. Be sure that you mark one L and one D for each of the numbers in Part I, so that every bracket contains two

heavy, black marks. Be sure also that the number of your answer on the answer sheet corresponds to the number in the booklet on which you are working. Are there any questions about how to do your marking?

Answer questions, if any. Then

SAY: **In Part II you will rate each picture separately. Look at the column under Part II on your answer sheet. Each number corresponds to the number of one picture in the booklet. If you like the activity pictured, mark L; if you dislike it, mark D.**

When you have finished Part I, go right on to Part II. Work as fast as you can without making mistakes. Do not spend too much time on any one group of pictures. You may begin.

The examiner should visually check papers shortly after examinees begin to work to make sure all are marking correctly. Do not, however, disturb the group.

A brief description of each picture is presente at the end of these directions. Refer to this list answer any question, should it arise, regarding tl nature of the activity pictured.

After approximately 10 minutes, another che of answer sheets should be made, and examine who are working too slowly in comparison to tl rest of the group should be encouraged to wo more rapidly.

When all have finished,

SAY: **Check your answer sheets to be sure that y have filled in all of the answers correctl Are all of your marks heavy, black lines? not, go over the light ones and darken the well. If you changed any answers, did y erase the wrong ones completely? Make yo answer sheet neat and clean.**

After sufficient time has elapsed,

SAY: **Now hand in the booklets and answer sheet**

Collect the materials, checking to be sure th you have all of them.

DESCRIPTION OF ACTIVITIES

1a. Facing a doorway with stone
1b. Using an adding machine
1c. Feeding chickens
2a. Working as a bank cashier
2b. Painting a picture
2c. Using a microscope
3a. Hand-carving a plaque
3b. Soldier saluting
3c. Repairing a watch
4a. Repairing a washing machine
4b. Felling a tree
4c. Clerking in a grocery store
5a. Teaching children
5b. Drafting a house plan
5c. Performing an experiment
6a. Directing traffic
6b. Typing
6c. Performing an acrobatic act
7a. Playing golf
7b. Bowling
7c. Playing tennis
8a. Performing an experiment
8b. Addressing a jury
8c. Drafting a house plan
9a. Keeping books
9b. Trimming furs
9c. Picking fruit
10a. Laying bricks
10b. Working as a night watchman
10c. Filing papers
11a. Threshing grain
11b. Studying fish
11c. Announcing on radio
12a. Cutting hair
12b. Inspecting meat
12c. Operating a printing press
13a. Moving stage scenery
13b. Trimming a hedge
13c. Working as a bellhop
14a. Playing a clarinet
14b. Working as an executive
14c. Working as an astronomer
15a. Testing milk
15b. Operating a potato digger
15c. Repairing a radio
16a. Picking fruit
16b. Working as a hospital orderly
16c. Wrapping a package
17a. Weighing chemicals
17b. Sculpturing
17c. Giving a physical examination
18a. Adjusting a sewing machine
18b. Typing
18c. Practicing dancing
19a. Forking hay
19b. Working in a cannery
19c. Waiting on tables
20a. Plowing a field
20b. Keeping books
20c. Taking a blood sample
21a. Making a cabinet
21b. Umpiring a playground game
21c. Carving in stone
22a. Typing
22b. Lettering a door
22c. Gardening
23a. Driving a cab
23b. Repairing shoes
12c. Trimming a window
24a. Cashiering in a restaurant
24b. Conducting a mechanical test
24c. Directing crane operation

a. Working as a bank officer
b. Judging a court case
c. Giving a piano recital
a. Carving a stone monument
b. Repairing a typewriter
c. Pruning a tree
a. Delivering packages
b. Shocking grain
c. Carrying luggage on a ship
a. Taking a photograph
b. Grinding optical lenses
c. Dissecting a fish
a. Demonstrating a new car
b. Examining teeth
c. Preparing a weather chart
a. Repairing a tractor
b. Shelving books
c. Operating an adding machine
a. Swimming
b. Hunting
c. Fishing
a. Decorating vases
b. Filing
c. Plumbing
a. Examining cabbages
b. Loading logs
c. Surveying
a. Making a dress
b. Cashiering in a restaurant
c. Examining X-rays
a. Grooming a horse
b. Riveting steel
c. Working as a postal clerk
a. Working as an archeologist
b. Selling real estate
c. Coaching a football team
a. Painting a ceiling
b. Gardening
c. Painting a sign
a. Working as a busboy
b. Milking cows
c. Working as a stock boy
a. Treating a sick horse
39b. Performing an experiment
39c. Delivering a sermon
40a. Repairing a watch
40b. Styling hair
40c. Making a floral wreath
41a. Painting a sign
41b. Wrapping a package
41c. Mining
42a. Skiing
42b. Mountain climbing
42c. Skating
43a. Filling a prescription
43b. Treating a sick dog
43c. Editing a newspaper
44a. Laying shingles
44b. Gardening
44c. Running an elevator
45a. Controlling corn pollenization
45b. Drafting
45c. Working as a court reporter
46a. Delivering mail
46c. Auctioneering
47a. Preparing the soil
47b. Dressing a window
47c. Working in an oilfield
48a. Using a microscope
48b. Teaching arithmetic
48c. Singing
49a. Clerking in a hotel
49b. Handpainting a tie
49c. Feeding horses
50a. Operating a metal lathe
50b. Feeding pigs
50c. Chauffeuring
51a. Testing vision
51b. Operating a movie camera
51c. Explaining a geological exhibit
52a. Decorating a plate
52b. Calling on a sales prospect
52c. Harvesting grain
53a. Picking lettuce
53b. Repairing a bicycle
53c. Life-guarding

PART 4

Directions for Scoring
Norms

Picture Interest Inventory

DIRECTIONS FOR SCORING

All examinees taking the *Picture Interest Inventory* mark responses on the answer sheet. Both hand-scoring and machine-scoring stencils are available for scoring the Inventory.

MACHINE SCORING THE ANSWER SHEETS

Direction for setting the machine are printed on the machine-scoring stencils. The scoring format requires six insertions for the nine scores.

HAND SCORING THE ANSWER SHEETS

Each score has a stencil which reveals the i
sponses that contribute to it. In the left margin
the answer sheet are the numbered boxes in whi
raw scores are recorded. No special scoring form
las are employed.

Upon completion of scoring, transfer the ra
scores to the corresponding spaces provided on t
profile page on the back of the answer she
Transfer is facilitated when the answer sheet
folded over vertically to the line of the score spac
on the profile page. Complete the profile as
rected in Part 2, page 15.

NORMS

The norms provided for the *Picture Interest Inventory* contain normalized standard scores (T-scores) and percentile ranks for males. They are found on page 24 and are used in the interpretation of the *Picture Interest Inventory* as described in Part 2 of this Manual. Limited data for females, presented in percentile form, are found on page 17.

THE NORMATIVE POPULATION

The percentile norms presented in Table 16 were obtained from the scores of a thousand Inventories given to junior high school, high school, and college students. They are based on cases reported from Arizona, California, Colorado, Indiana, Iowa, Massachusetts, Minnesota, Missouri, Nebraska, New York, Ohio, Oklahoma, Pennsylvania, Texas, Virginia, Vermont and Washington.

Since the six Fields and two of the Supplementary Scales are similar to the corresponding scales of the *Occupational Interest Inventory*, that instrument was administered for comparative purposes to half of the standardization sample. One junior high school group took both the *Picture Interest Inventory* and the *Occupational Interest Inventory, Intermediate*, one high school group took both the PII and the OII, Advanced, and one junior high school and one high school group took only the PII. Thus, percentile tables were studied for four groups. For the two groups that took the two interest inventories, the score equivalent to the 10th, 25th, 50th, 75th, and 90th percentile points for the corresponding scales of the two Inventories were compared. These eight comparisons showed the distributions of the two PII standardization samples to be in very close agreement to the two OII samples.

The four PII groups were next compared
independent samples and were found to agree
within two raw score points at all points along t
distribution for seven of the nine scales. For t
other two scales, comparisons were made betwe
the Advanced and the Intermediate level dist
butions. For one of the scales, a raw score diffe
ence of three points was found at the 99th pe
centile. For the other scale, three raw score poi
differences were found at the 10th and 20th pe
centile points. At all other percentile points t
two distributions differed by two raw score poin
or less. This unusually close agreement amo
the four population samples permitted the fin
publication of but a single set of percentile norm

Norms for the *Picture Interest Inventory* refle
the performance of examinees who are repr
sentative of the population nationally on intere
inventory items which have been carefully selecte
and validated.

THE CONSTRUCTION OF THE STANDARD SCORE AND PERCENTILE NORMS

In constructing the norms for the *Picture Intere*
Inventory the following procedures were employe

1. Raw score results were first converted in
percentile equivalents.
2. Normalized standard scores were obtaine
from a table of percentiles and their equiv
lent standard scores. These are shown
Table 15.
3. The raw scores which correspond to preci
percentile points and their equivalent stan
ard scores were identified.

TABLE 15

PERCENTILE RANKS AND THEIR EQUIVALENT NORMALIZED STANDARD SCORES

ercentile Rank	Normalized Standard Score	Percentile Rank	Normalized Standard Score	Percentile Rank	Normalized Standard Score
99	73.3	66	54.1	34	45.9
98	70.5	65	53.9	33	45.6
97	68.8	64	53.6	32	45.3
96	67.5	63	53.3	31	45.0
95	66.4	62	53.1	30	44.8
94	65.5	61	52.8	29	44.5
93	64.8	60	52.5	28	44.2
92	64.1	59	52.3	27	43.9
91	63.4	58	52.0	26	43.6
90	62.8	57	51.8	25	43.3
89	62.3	56	51.5	24	42.9
88	61.8	55	51.3	23	42.6
87	61.3	54	51.0	22	42.3
86	60.8	53	50.8	21	41.9
85	60.4	52	50.5	20	41.6
84	59.9	51	50.3	19	41.2
83	59.5	50	50.0	18	48.0
82	59.2	49	49.7	17	40.5
81	58.8	48	49.5	16	40.1
80	58.4	47	49.2	15	39.6
79	58.1	46	49.0	14	39.2
78	57.7	45	48.7	13	38.7
77	57.4	44	48.5	12	38.2
76	57.1	43	48.2	11	37.7
75	56.7	42	48.0	10	37.2
74	56.4	41	47.7	9	36.6
73	56.1	40	47.5	8	35.9
72	55.8	39	47.2	7	35.2
71	55.5	38	46.9	6	34.5
70	55.2	37	46.7	5	33.6
69	55.0	36	46.4	4	32.5
68	54.7	35	46.1	3	31.2
67	54.4			2	29.5
				1	26.7

4. The raw scores were then assigned to fifteen percentile ranges. The midpoints for these ranges are each of nine decile points plus the 1st, 2nd, 5th, 95th, 98th, and 99th percentile points. Thus each of fifteen percentile points listed on the norm table, page 24, is the midpoint of a percentile range. For example, the 60th percentile represents all the percentile points between 55.0 and 64.9.[5]

5. The normalized standard scores corresponding to the midpoints of the fifteen percentile ranges used in the norm table were then identified. The fractional standard scores equivalent to the percentile range midpoints were then rounded to the nearest whole numbers for presentation in the tables of norms. For example, in Table 16, the standard score equivalent to the 90th percentile is given as 63 rather than 62.8.

PERCENTILE NORMS

Percentile norms for test scores provide for the comparison of individual students with each other, with their class or group, and with national results. They can also be used as an aid in compiling significant cumulative records.

A percentile can be described as a point on a 100-point scale which gives the per cent of scores which fall below that particular percentile. For example, a student whose score falls at the 70th percentile point exceeds 70 per cent of the population on which the test was standardized. Such a score may also be interpreted to mean that the other 30 per cent of the students in the standardization group exceed his score.

STANDARD SCORE NORMS

Normalized standard score norms provide a linear scale of equal units for the study of an individual's scores on different tests. These can then be used for the comparison of individual students with each other, with their class or group, and with national results. Normalized standard scores have a fixed relationship with percentile equivalents which is reflected in the tables of norms, where percentiles and standard scores are presented in parallel columns.

Standard score and percentile norms for scores on the individual Fields and Supplemental Scale are presented on page 24. The standard scores are presented in the extreme left and right columns of the tables. The percentile ranks are in the columns immediately inside the standard score columns. For example, a raw score of 17 on the Interpersonal Service Field has a percentile rank of 60 and a standard score of 53.

[5] The midpoints of the three percentile ranges at each end of the distribution are not as easily computed as the nine middle ranges. These percentile midpoints and their corresponding ranges are: 1, 0-1.4; 2, 1.5-2.4; 5, 2.5-7.4; 95, 92.5-97.4; 98, 97.5-98.4; and 99, 98.5-100.

TABLE 16

STANDARD SCORE AND PERCENTILE NORMS FOR MALES—PICTURE INTEREST INVENTORY

STANDARD SCORE	PERCENTILE	FIELD OF INTEREST						SUPPLEMENTAL SCALE			PERCENTILE	STANDARD SCORE
		INTER-PERSONAL SERVICE	NATURAL	MECHANICAL	BUSINESS	ESTHETIC	SCIENTIFIC	VERBAL	COMPUTA-TIONAL	TIME PERSPECTIVE		
73	99	34+	56+	42+	52+	37+	37+	19+	24+	15+	99	73
71	98	31-33	53-55	39-41	48-51	33-36	35-36	18	22-23	14	98	71
67	95	28-30	49-52	36-38	43-47	29-32	32-34	16-17	20-21	13	95	67
63	90	24-27	45-48	33-35	37-42	25-28	29-31	14-15	18-19	12	90	63
58	80	21-23	39-44	31-32	32-36	22-24	26-28	13	16-17	11	80	58
55	70	19-20	34-38	29-30	28-31	20-21	24-25	11-12	15	10	70	55
53	60	17-18	30-33	27-28	24-27	18-19	22-23	10	14	9	60	53
50	50	15-16	26-29	25-26	21-23	16-17	20-21	9	12-13	8	50	50
47	40	14	21-25	23-24	18-20	15	18-19	7-8	10-11	7	40	47
45	30	13	17-20	21-22	14-17	13-14	16-17	6	9	6	30	45
42	20	11-12	14-16	18-20	10-13	12	14-15	5	7-8	5	20	42
37	10	9-10	10-13	15-17	7-9	10-11	11-13	4	5-6	4	10	37
33	5	7-8	8-9	13-14	5-6	8-9	8-10	2-3	3-4	3	5	33
29	2	5-6	5-7	10-12	3-4	6-7	5-7	1	1-2	2	2	29
27	1	0-4	0-4	0-9	0-2	0-5	0-4	—	—	0-1	1	27

Grades 7 to Adult

Picture Interest Inventory

DEVISED BY KURT P. WEINGARTEN

INSTRUCTIONS TO EXAMINEES:

Here are some pictures for you to judge. Your responses will help to identify your occupational likes and dislikes. Do not consider how much you would earn, how much training would be necessary, nor what others may think of the activity. This is not a test, so there are no "right" or "wrong" answers.

DO NOT WRITE OR MARK ON THIS BOOKLET. MARK ALL OF YOUR ANSWERS ON THE ANSWER SHEET.

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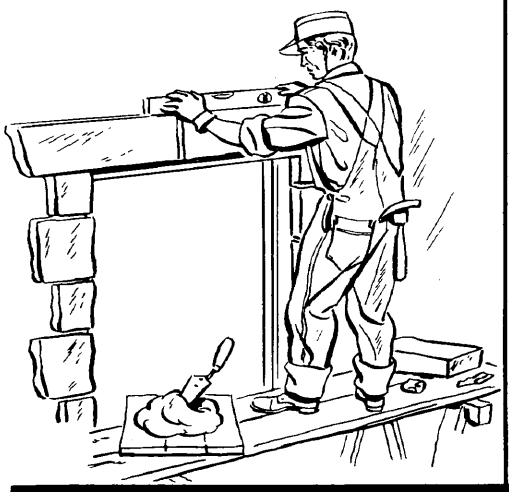
PART I

1

a



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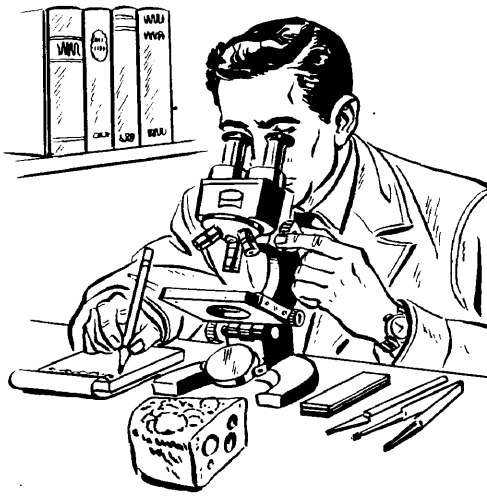

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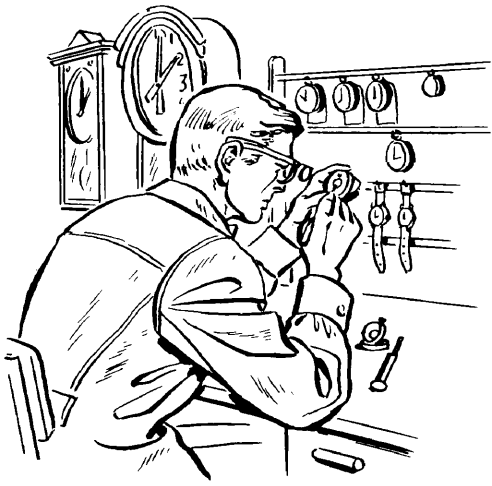

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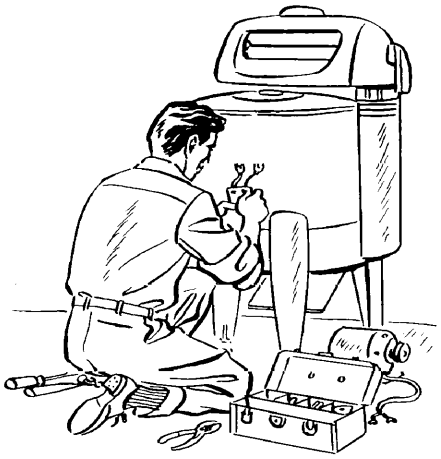

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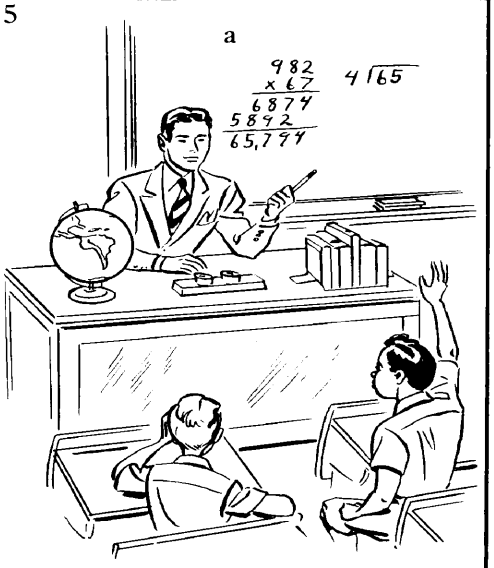

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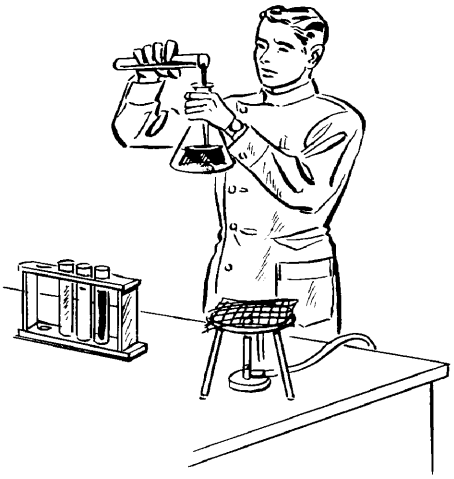

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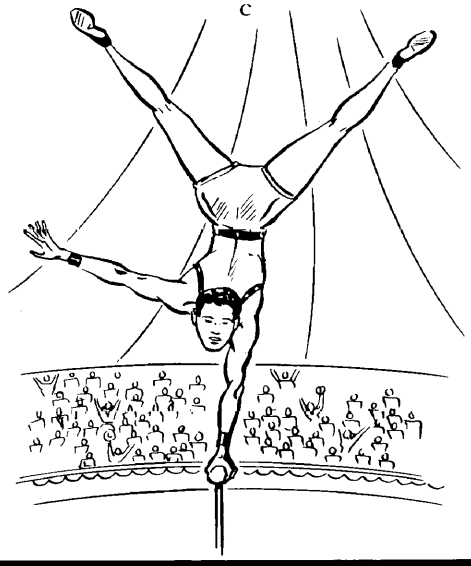

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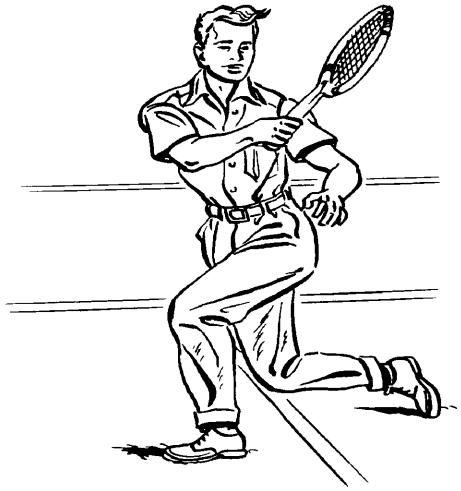

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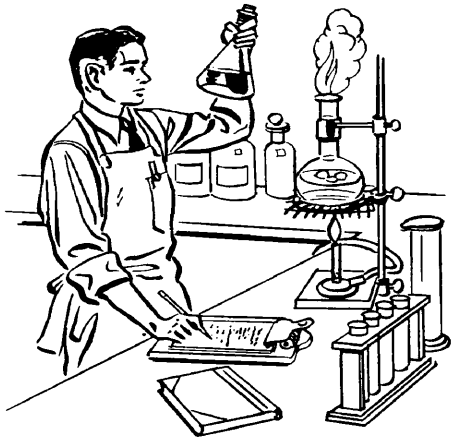

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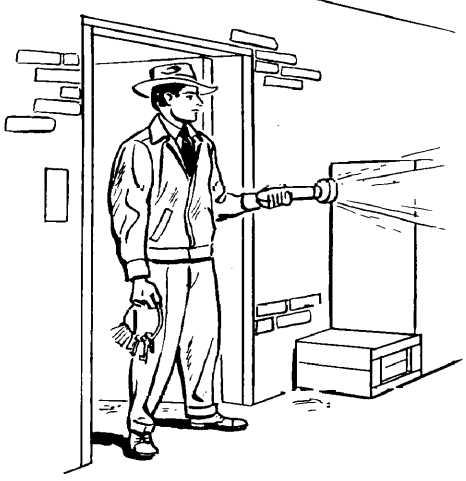

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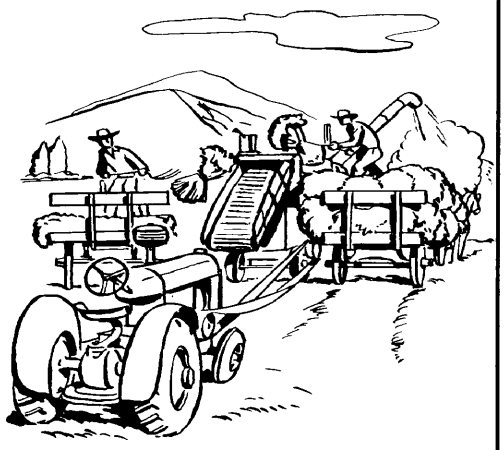

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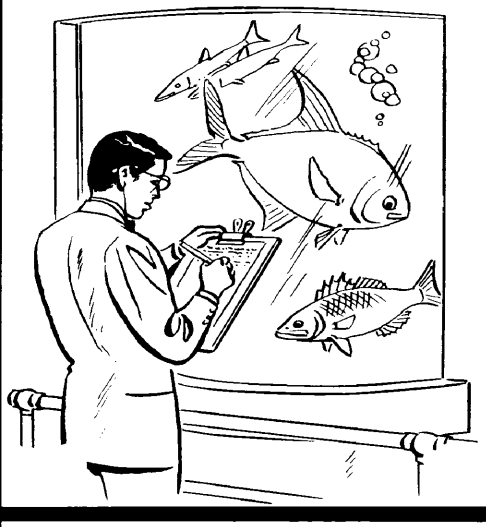

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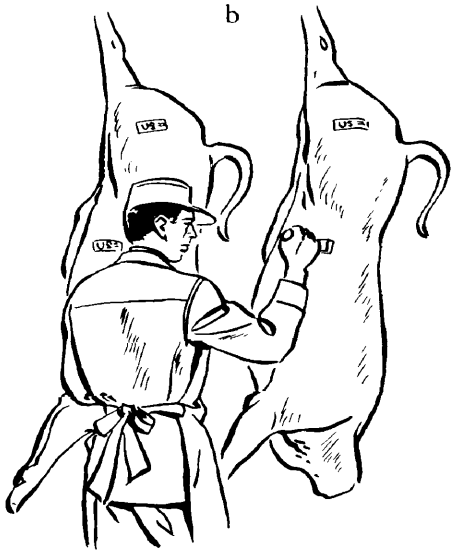

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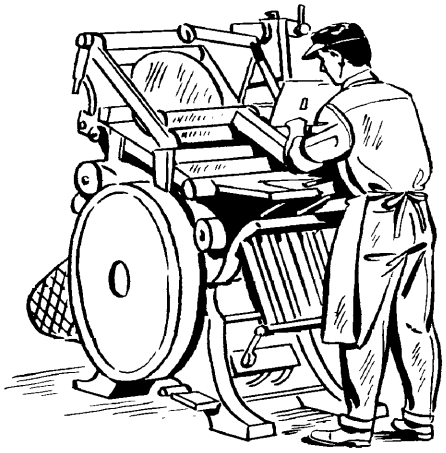

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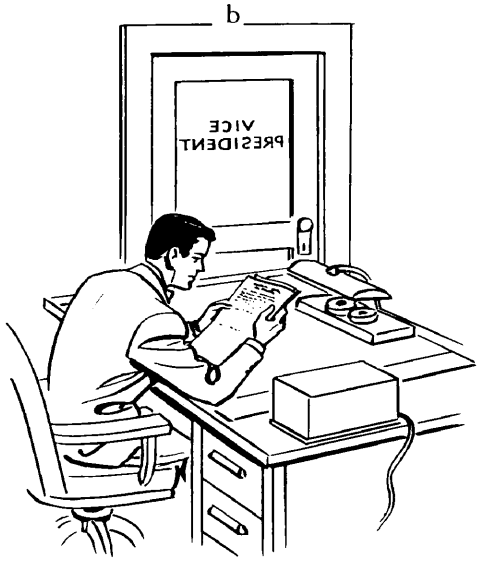

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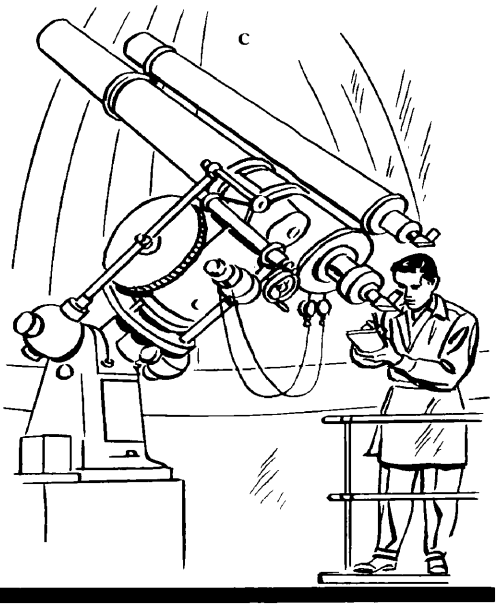

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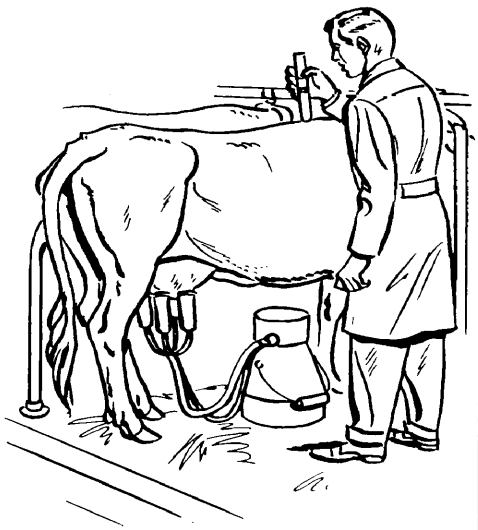

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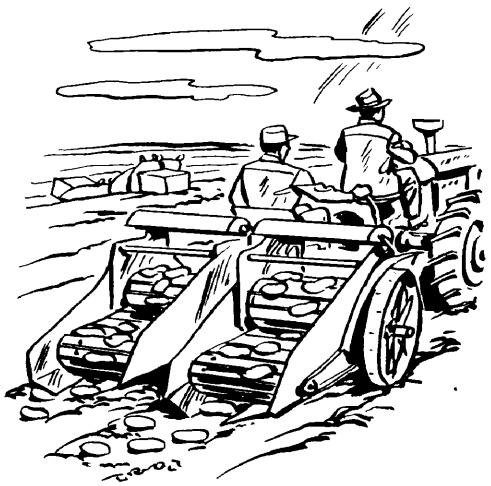

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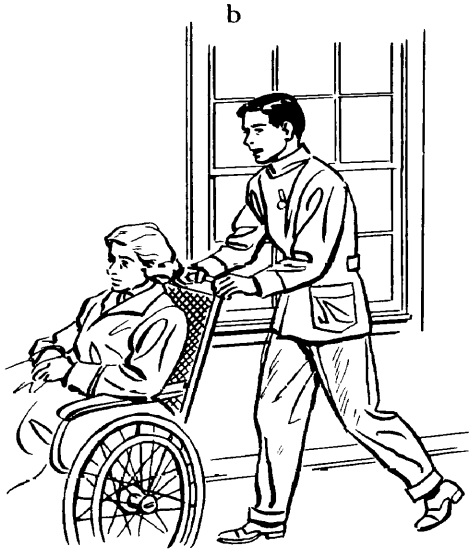

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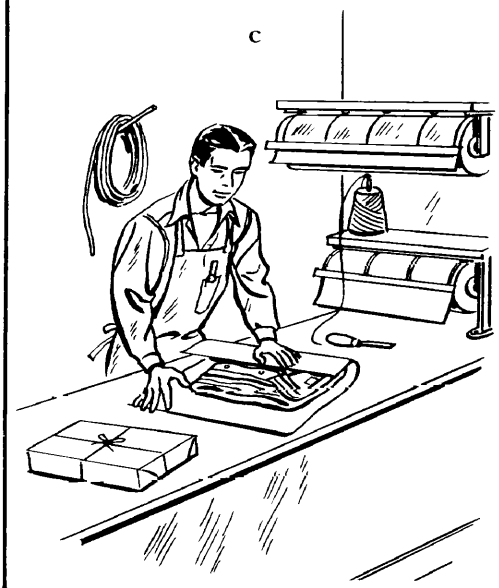

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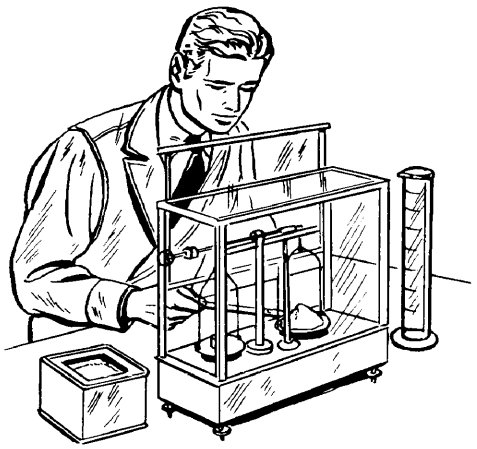

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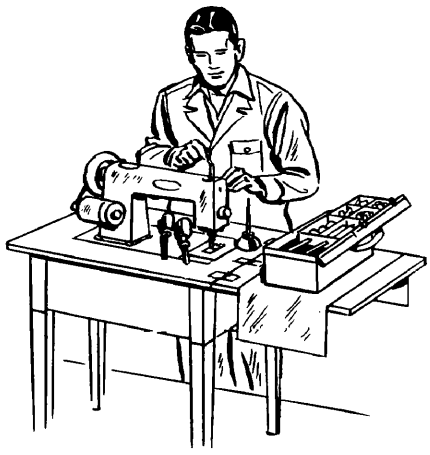

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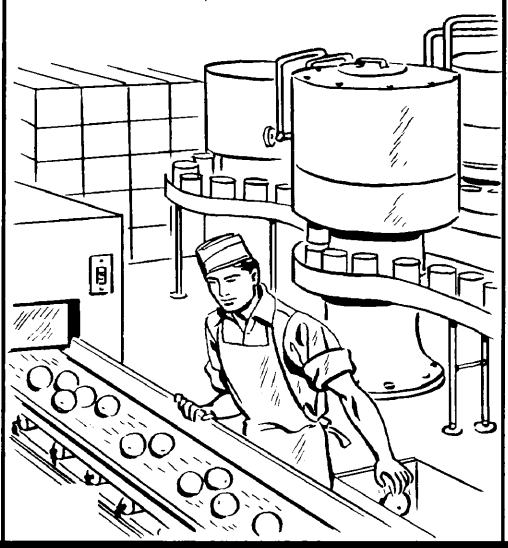

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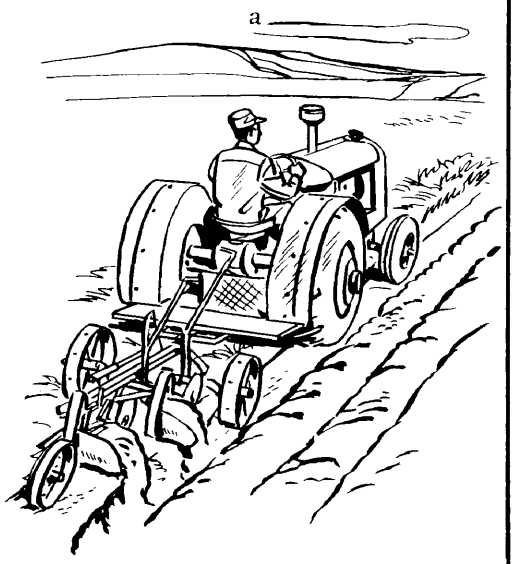

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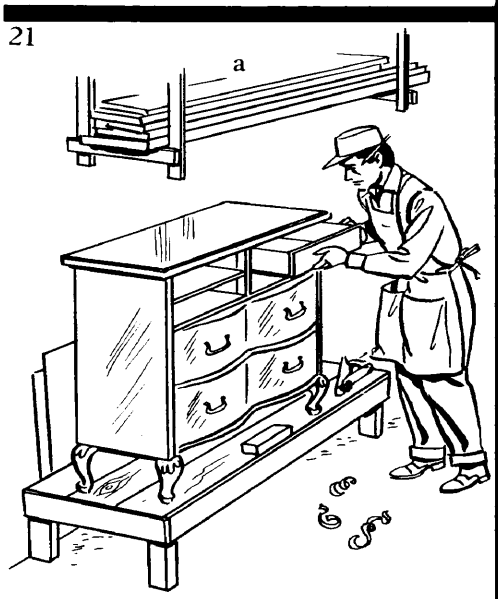

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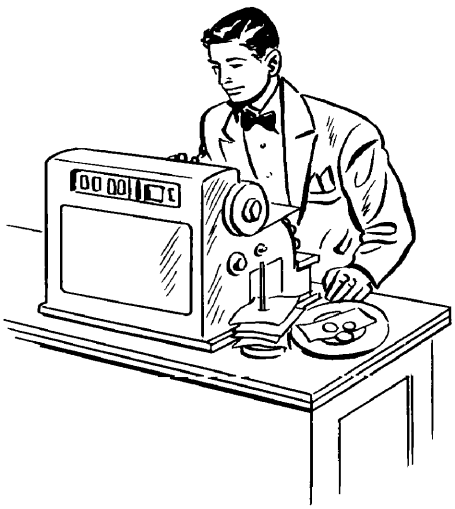

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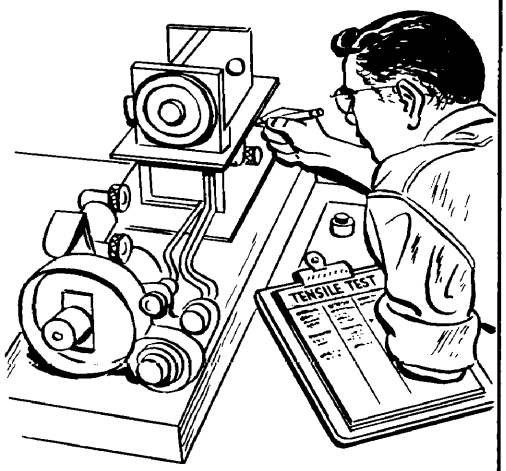

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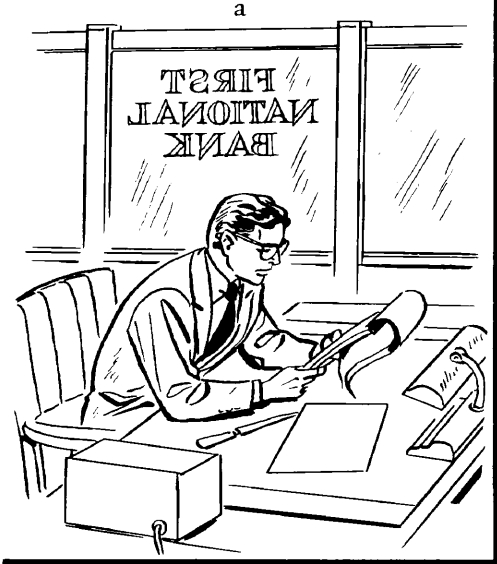

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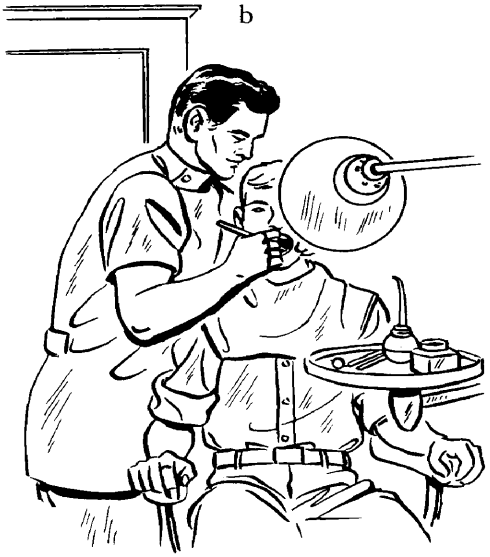

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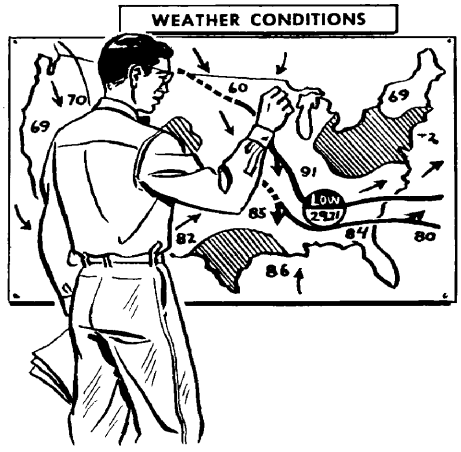

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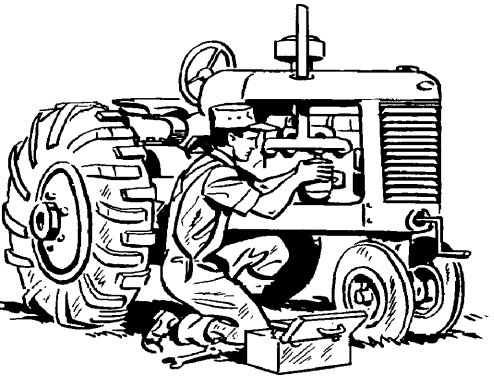

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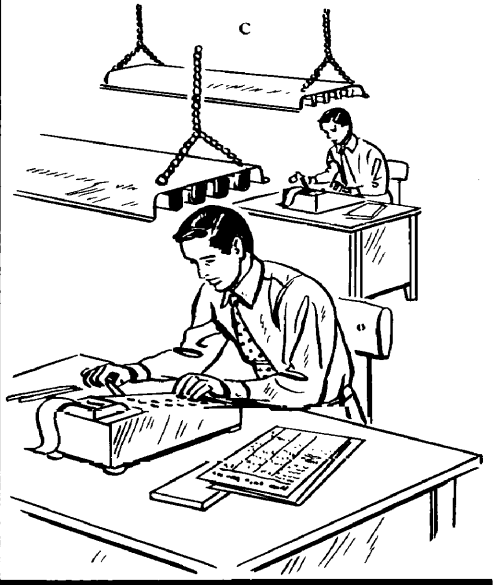

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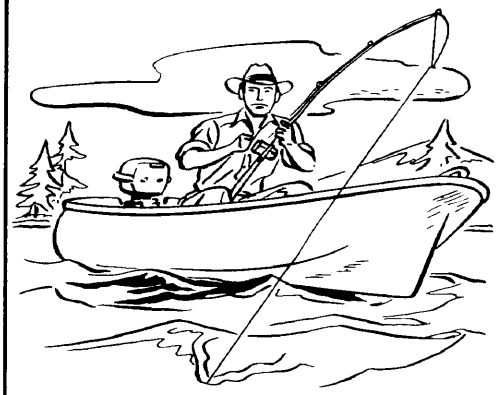

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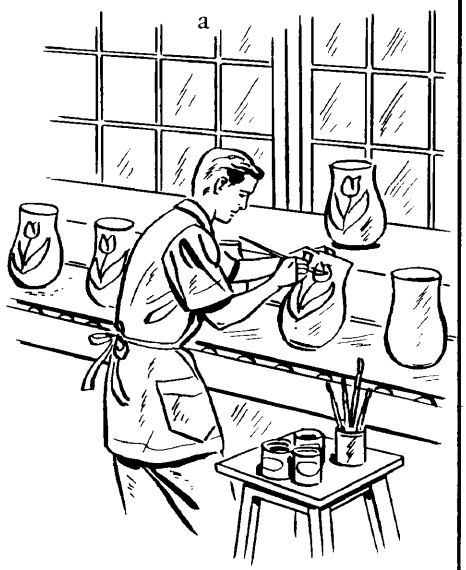

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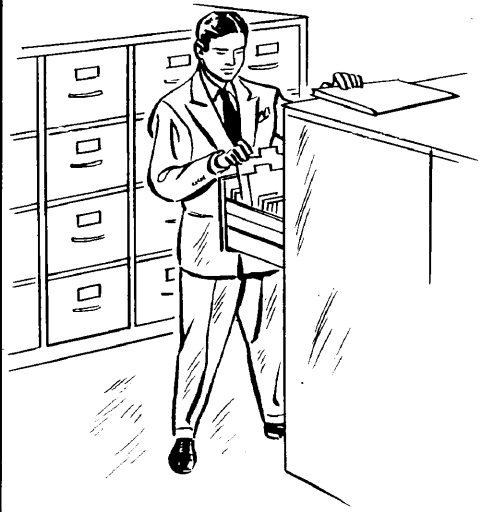

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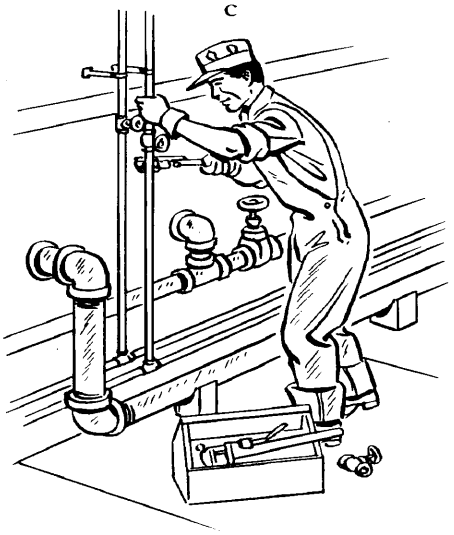

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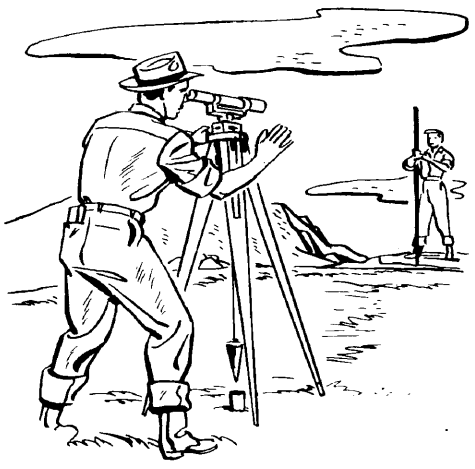

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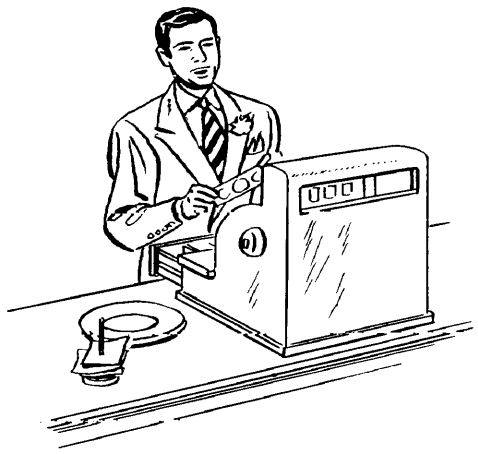

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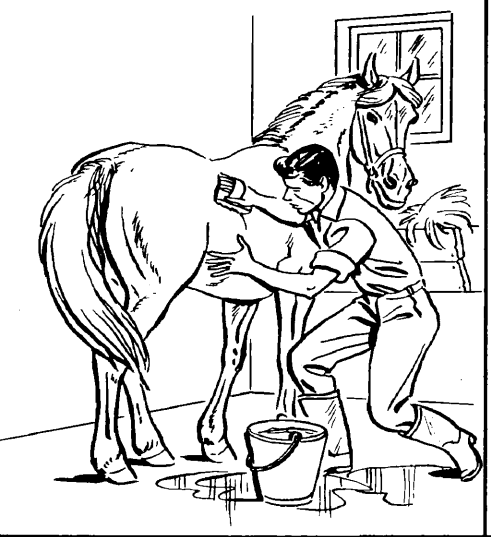

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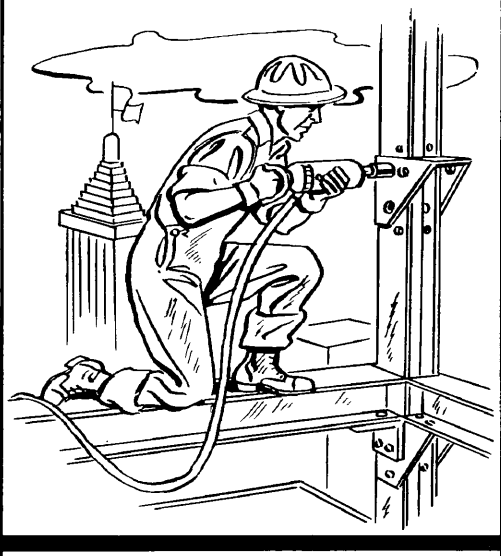

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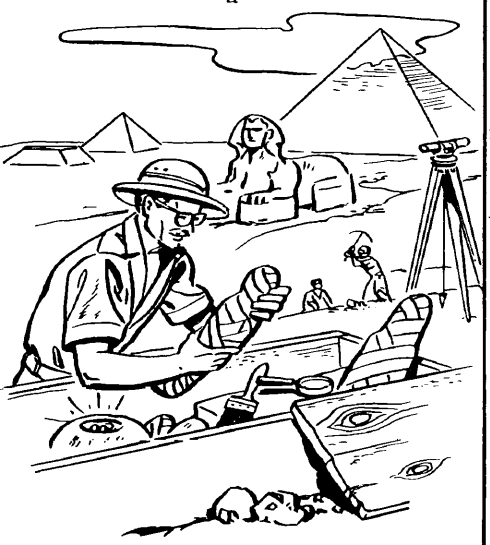

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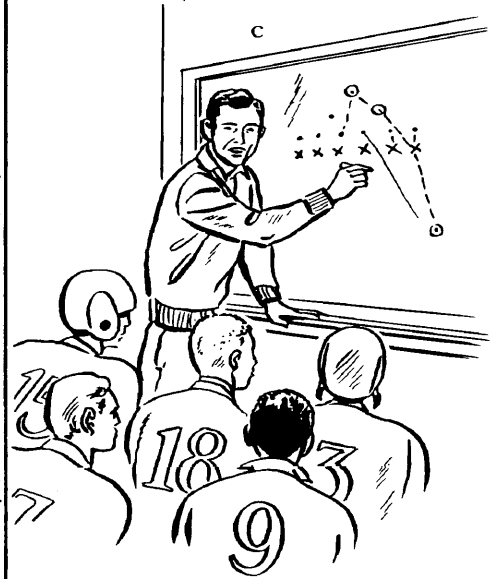

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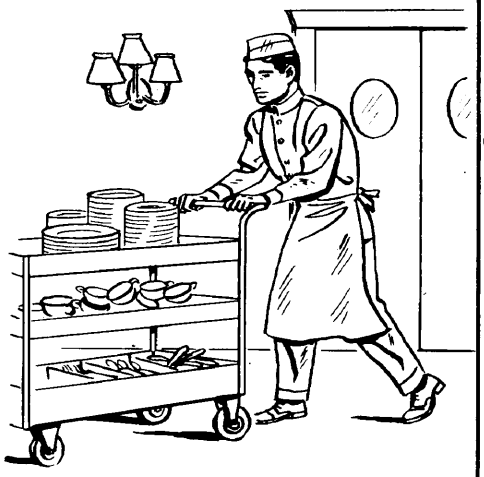

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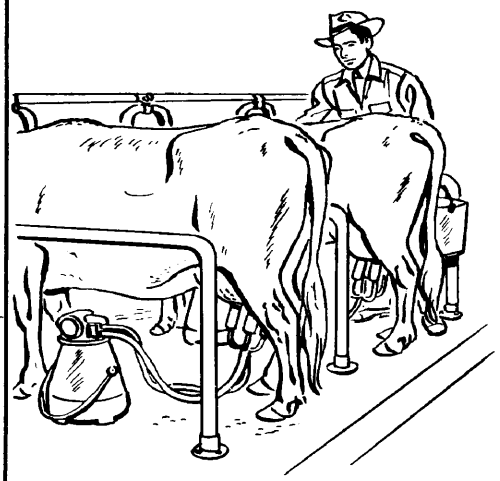

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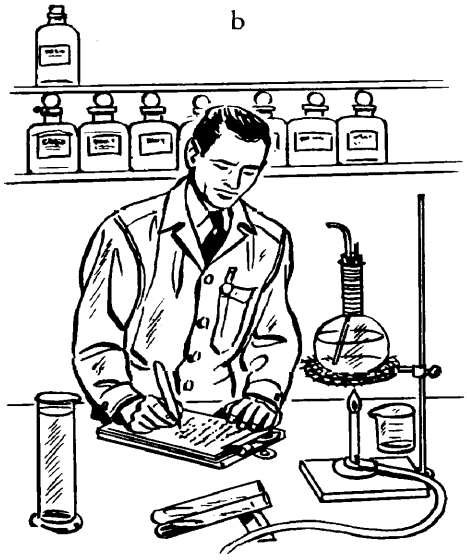

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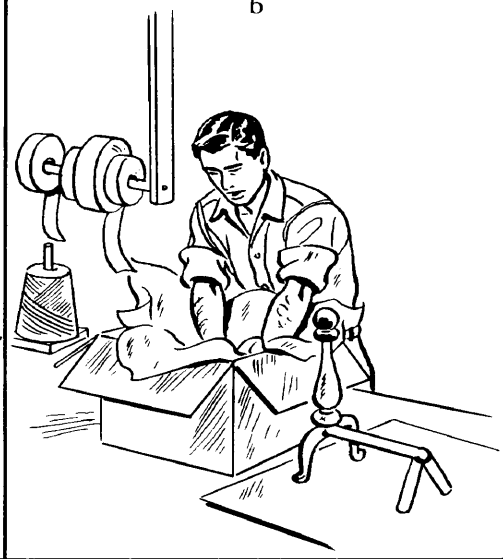

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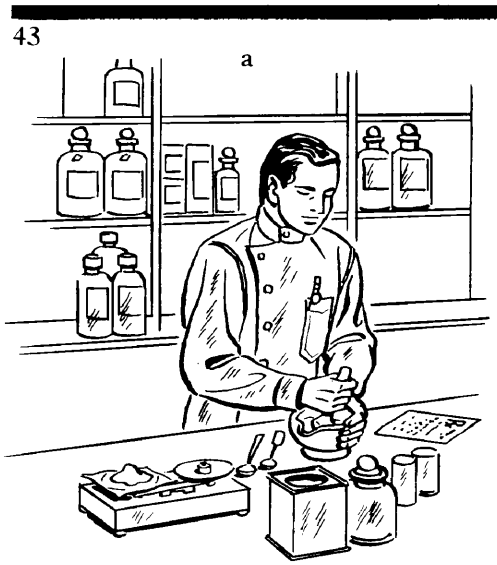

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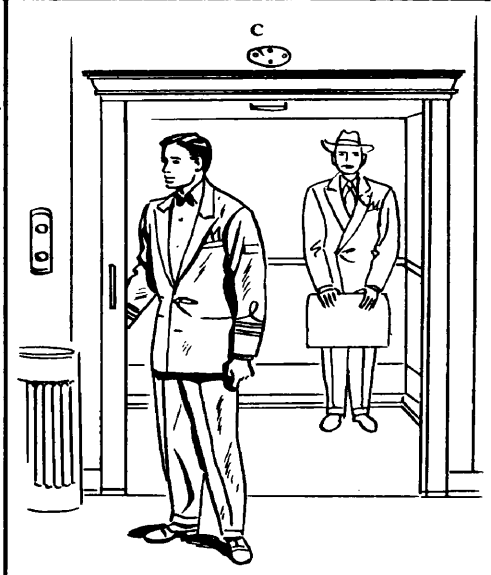

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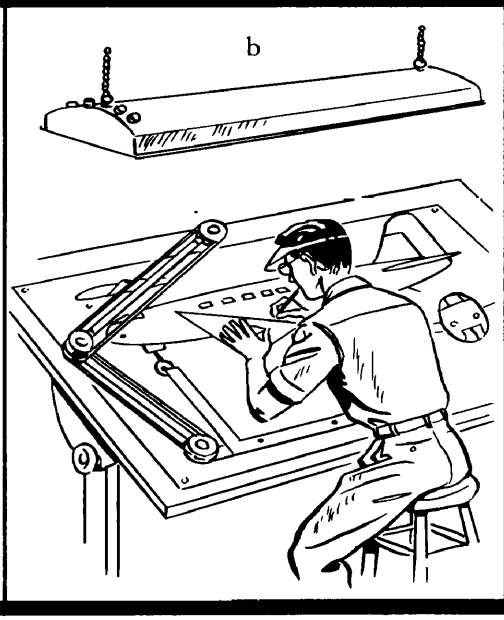

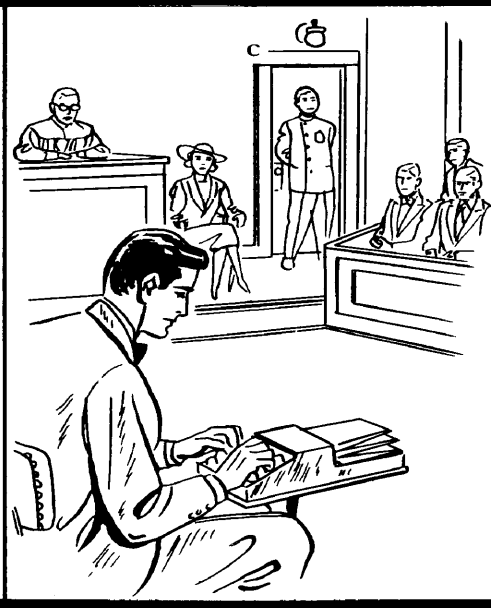

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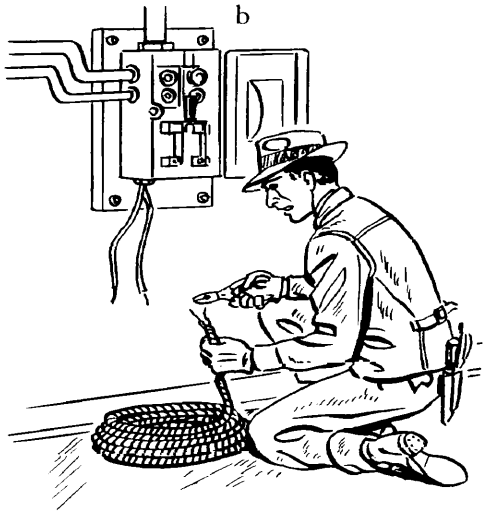

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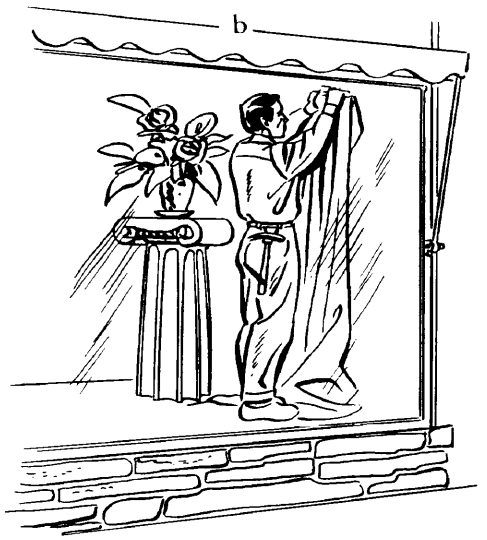

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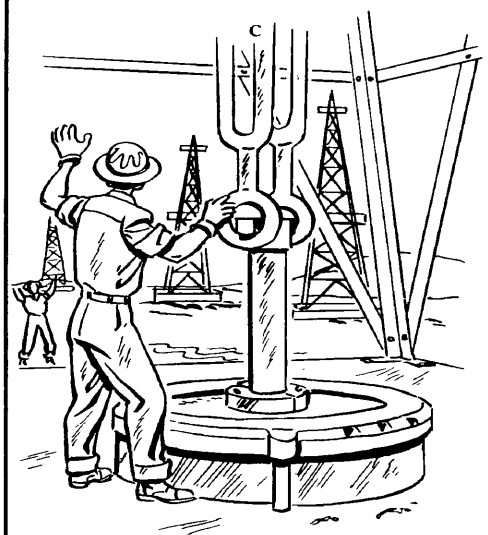

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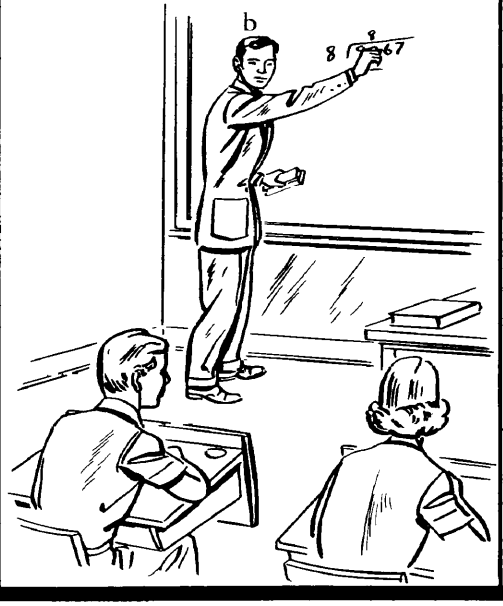

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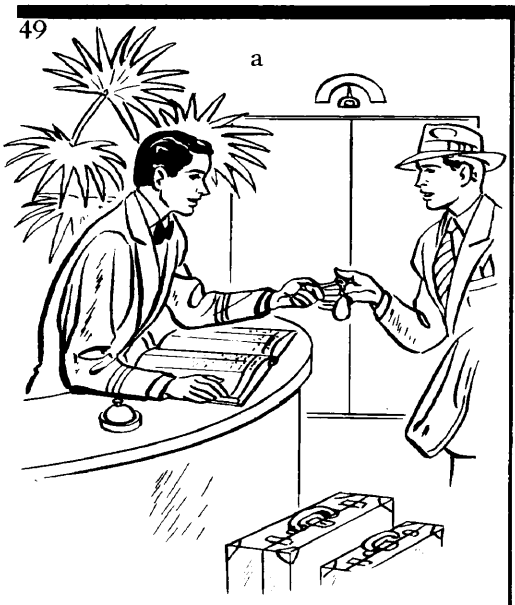

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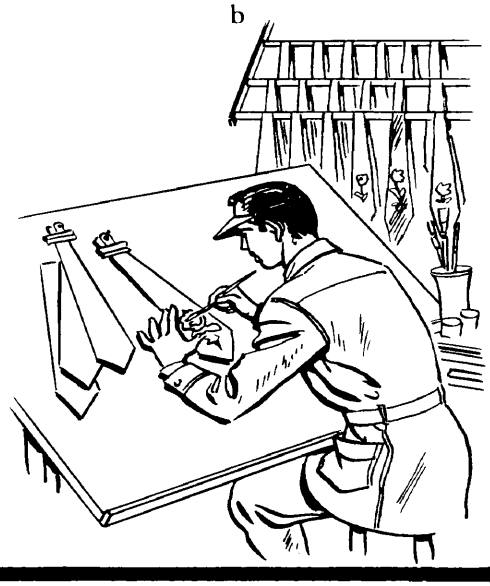

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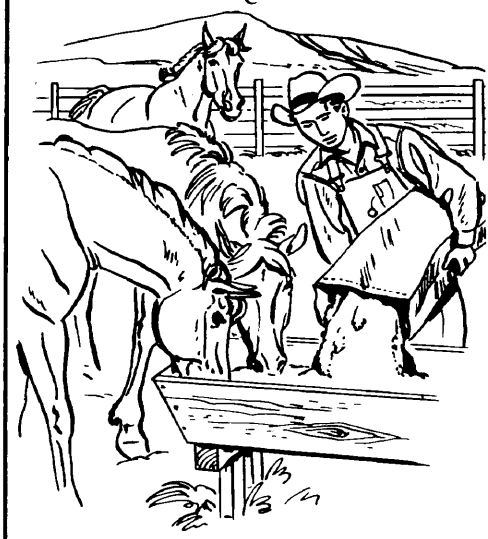

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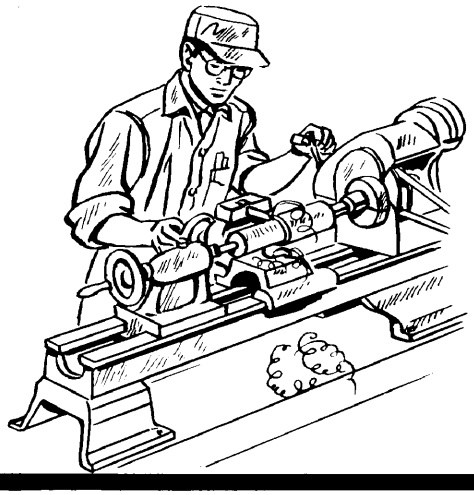

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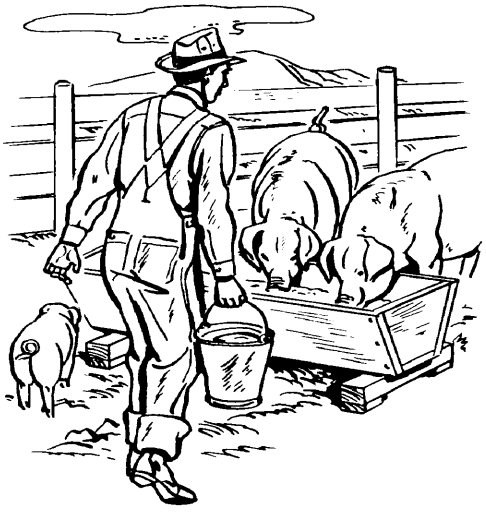

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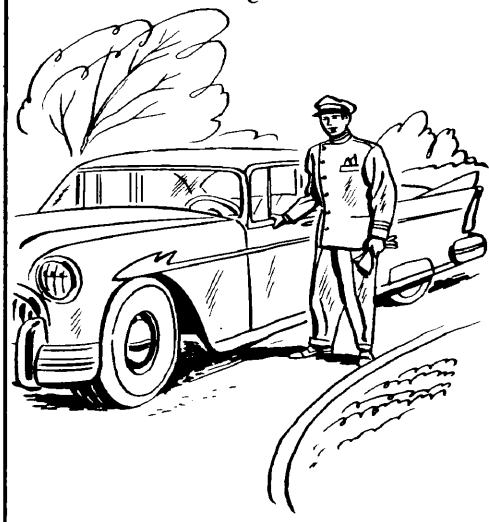

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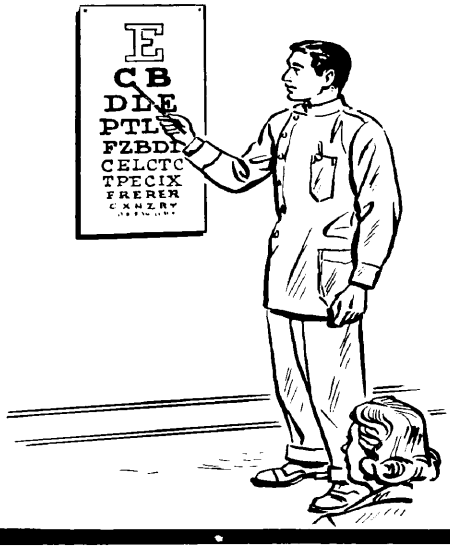

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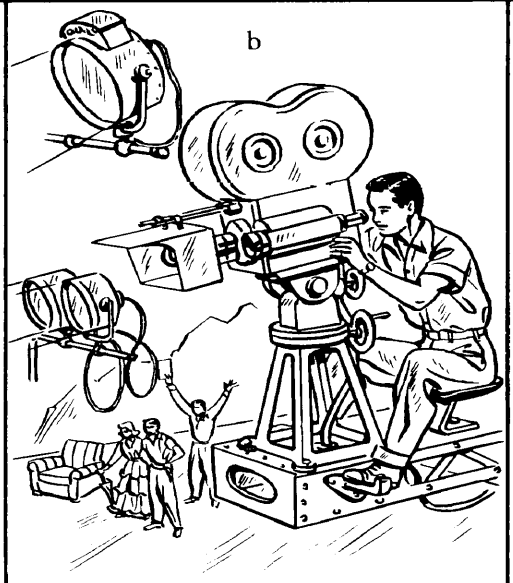

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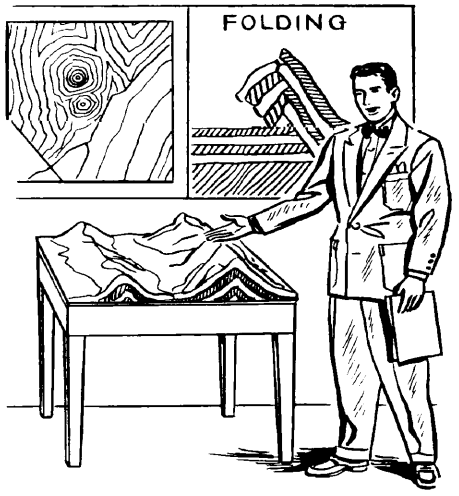

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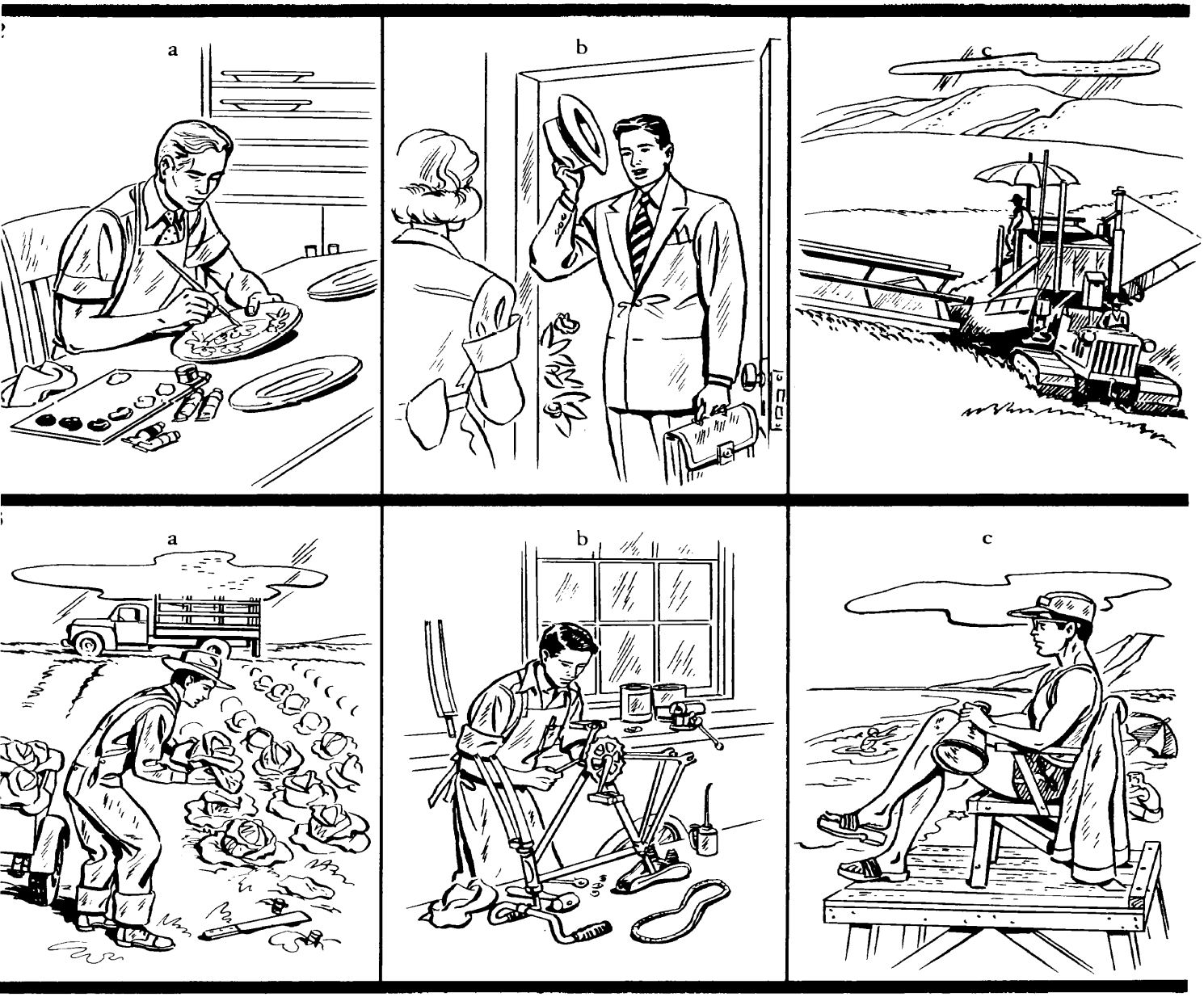

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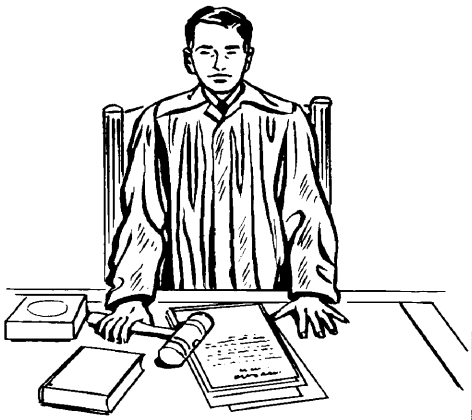

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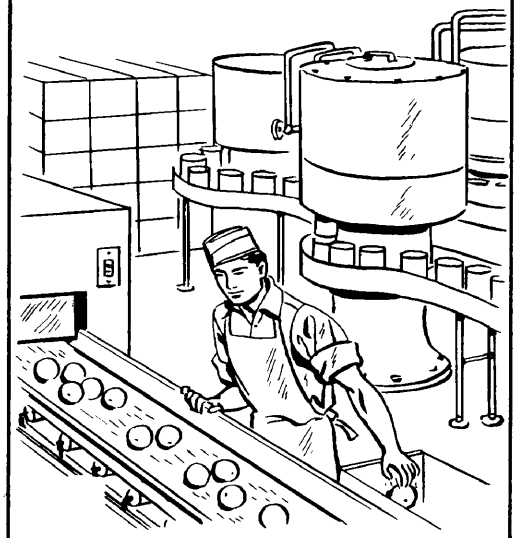

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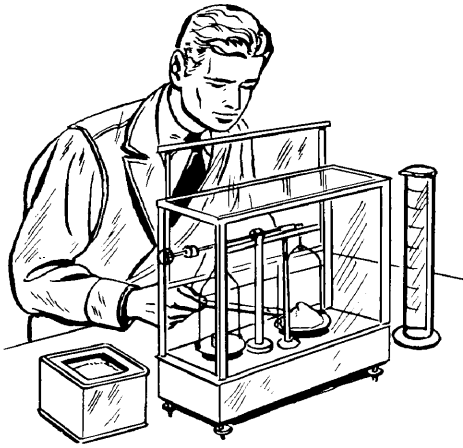

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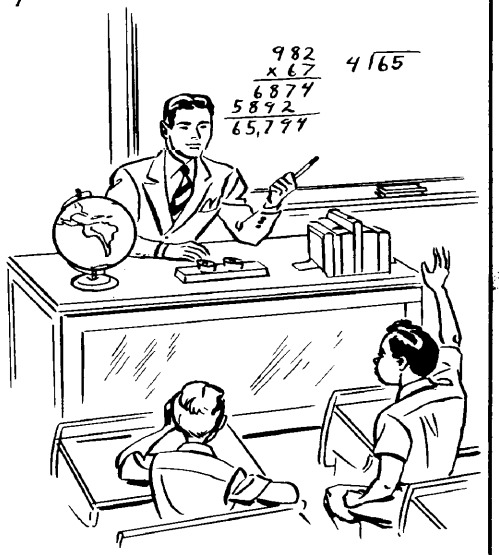

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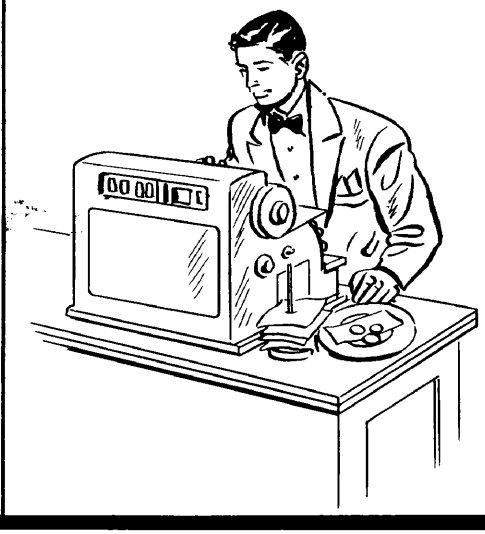

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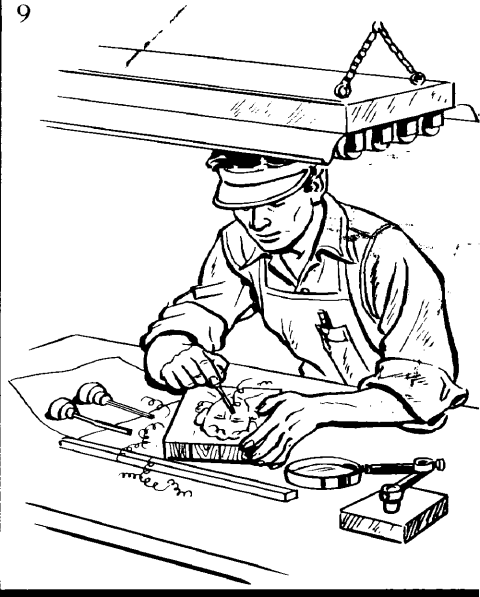

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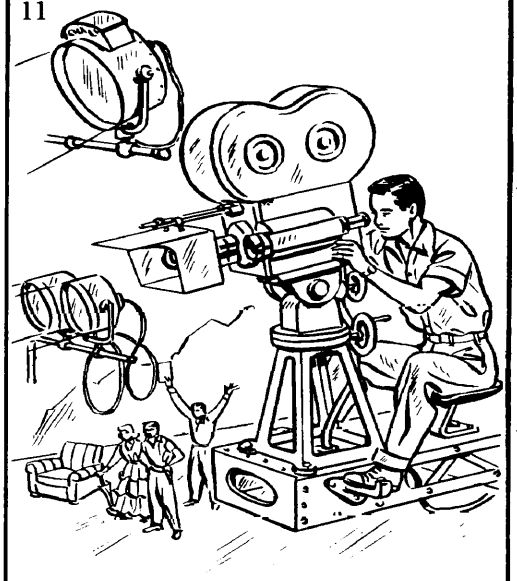

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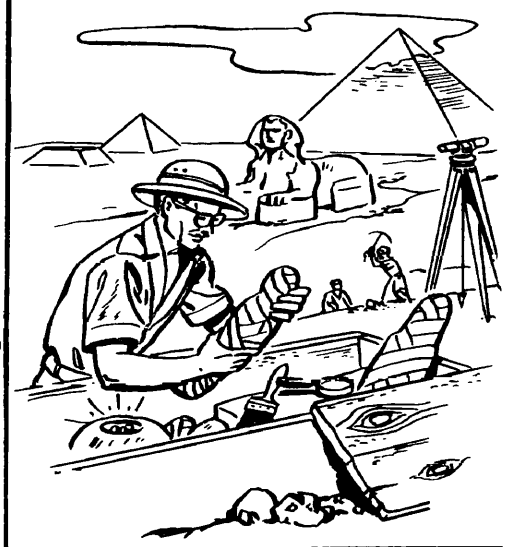

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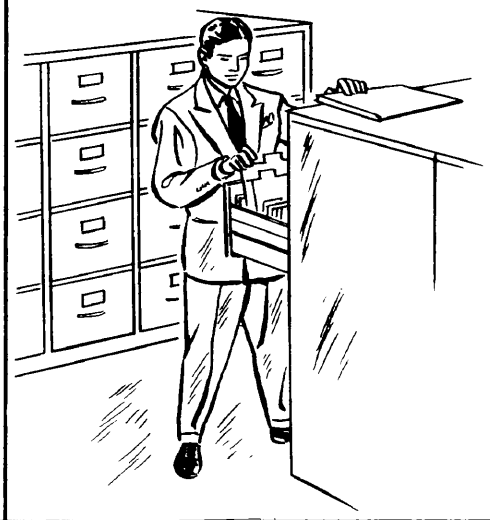

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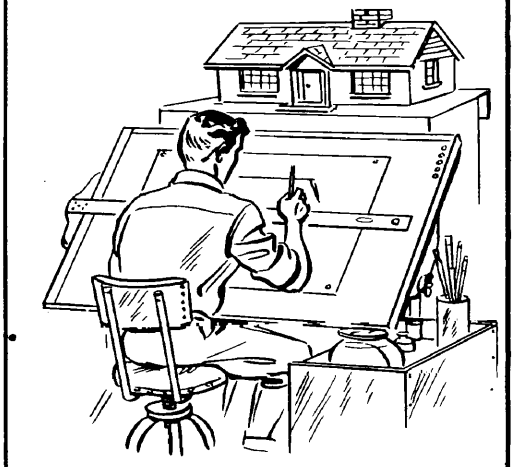

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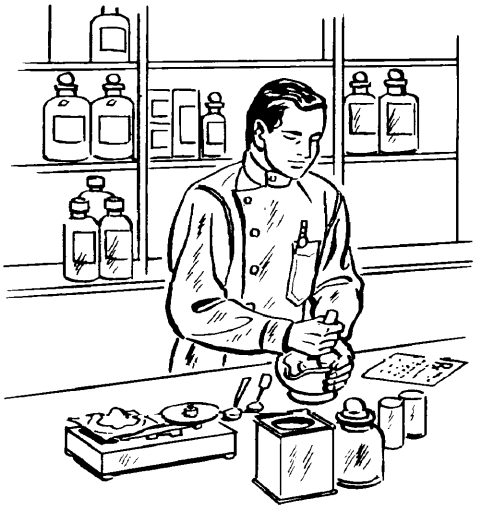

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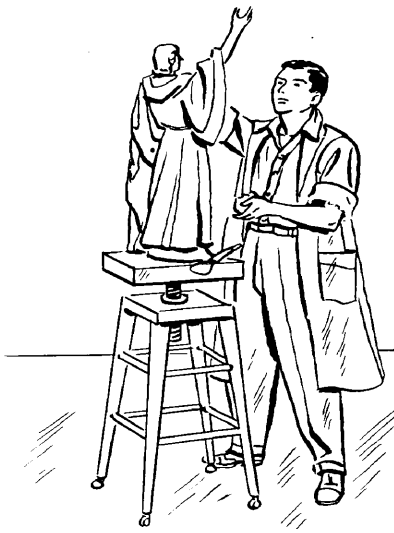

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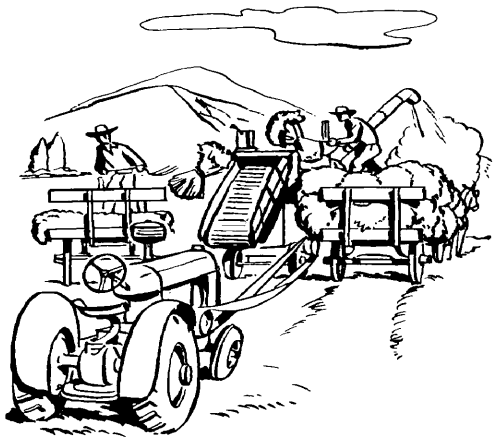

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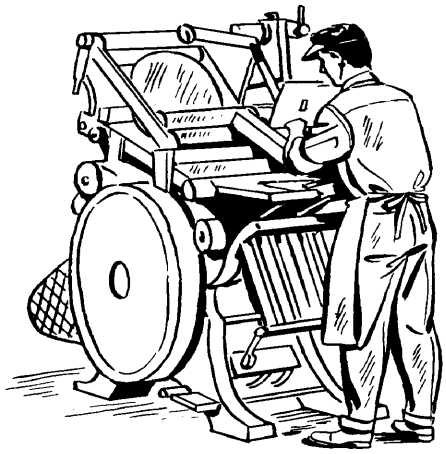

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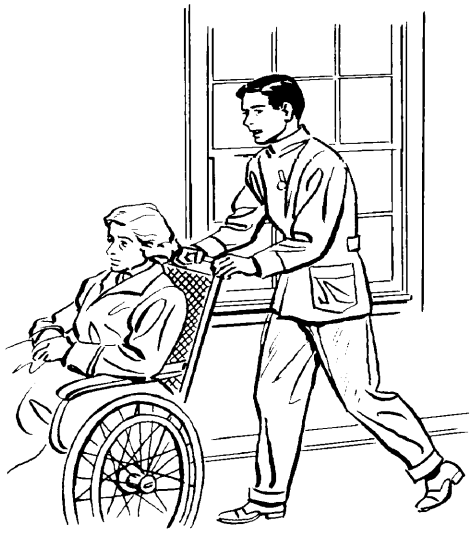

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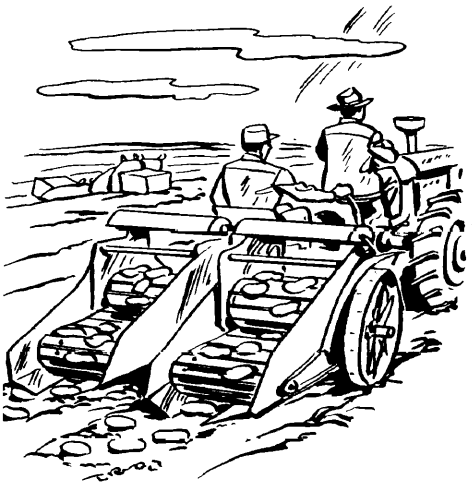

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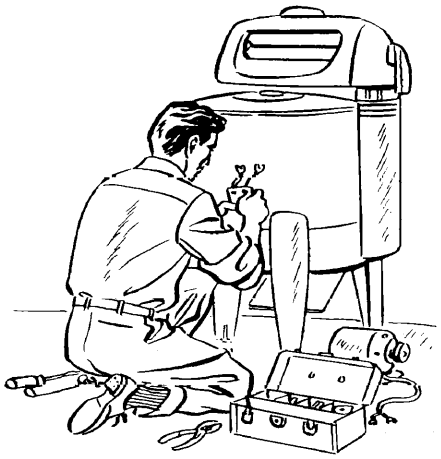

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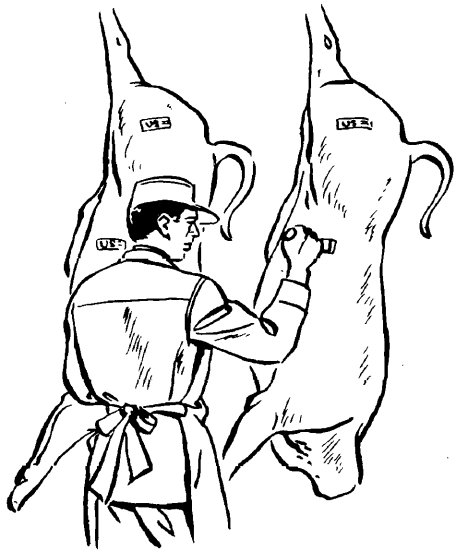
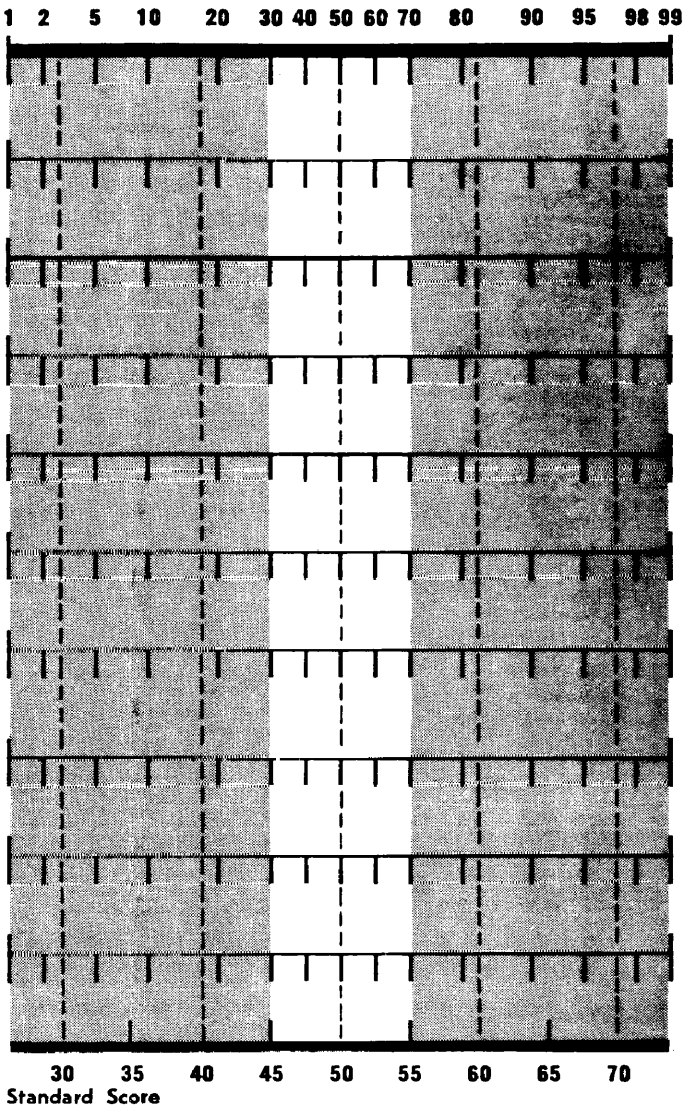


STOP NOW WAIT FOR FURTHER INSTRUCTION

Component	Possible Score	Examinee's Score	Percentile Rank
1. Interp'nal.	58		
2. Nat.	64		
3. Mech.	58		
4. Bus.	68		
5. Esth.	61		
6. Sci.	55		
Verbal	28		
Comp.	30		
Time Persp.	22		



PERCENTILE NORMS

1. Interpersonal	2. Natural	3. Mechanical	4. Business	5. Esthetic	6. Scientific	Verbal	Computational	Time Perspective	PERCENTILE
34+	56+	42+	52+	37+	37+	19+	24+	15+	99
31-33	53-55	39-41	48-51	33-36	35-36	18	22-23	14	98
28-30	49-52	36-38	43-47	29-32	32-34	16-17	20-21	13	95
24-27	45-48	33-35	37-42	25-28	29-31	14-15	18-19	12	90
21-23	39-44	31-32	32-36	22-24	26-28	13	16-17	11	80
19-20	34-38	29-30	28-31	20-21	24-25	11-12	15	10	70
17-18	30-33	27-28	24-27	18-19	22-23	10	14	9	60
15-16	26-29	25-26	21-23	16-17	20-21	9	12-13	8	50
14	21-25	23-24	18-20	15	18-19	7-8	10-11	7	40
13	17-20	21-22	14-17	13-14	16-17	6	9	6	30
11-12	14-16	18-20	10-13	12	14-15	5	7-8	5	20
9-10	10-13	15-17	7-9	10-11	11-13	4	5-6	4	10
7-8	8-9	13-14	5-6	8-9	8-10	2-3	3-4	3	5
5-6	5-7	10-12	3-4	6-7	5-7	1	1-2	2	2
0-4	0-4	0-9	0-2	0-5	0-4	—	—	0-1	1

Picture Interest Inventory

Grades 7 to Adult

DEVISED BY KURT P. WEINGARTEN •

Instructions for completing the profile may be found in the Manual of Directions.

IBM FORM I.T.S. 1100 B 5673-2

Picture Interest Inventory

Grades 7 to Adult

Devised by KURT P. WEINGARTEN

ANSWER SHEET NO. 5153

NAME (Last, First, Middle)

SCHOOL OR ORGANIZATION

CITY AND STATE

EXAMINER

GRADE OR OCCUP.

SEX (Circle One) M F

DATE OF TEST Month Day Year

DATE OF BIRTH Month Day Year

YOUR AGE TODAY ( )

TP C V 1 2 3 4 5 6

PART I

Mark one L and one D in each bracket.

1 [a L D b L D c]	9 [a L D b L D c]	17 [a L D b L D c]	25 [a L D b L D c]	33 [a L D b L D c]	41 [a L D b L D c]	49 [a L D b L D c]	
2 [a L D b L D c]	10 [a L D b L D c]	18 [a L D b L D c]	26 [a L D b L D c]	34 [a L D b L D c]	42 [a L D b L D c]	50 [a L D b L D c]	
3 [a L D b L D c]	11 [a L D b L D c]	19 [a L D b L D c]	27 [a L D b L D c]	35 [a L D b L D c]	43 [a L D b L D c]	51 [a L D b L D c]	
4 [a L D b L D c]	12 [a L D b L D c]	20 [a L D b L D c]	28 [a L D b L D c]	36 [a L D b L D c]	44 [a L D b L D c]	52 [a L D b L D c]	
5 [a L D b L D c]	13 [a L D b L D c]	21 [a L D b L D c]	29 [a L D b L D c]	37 [a L D b L D c]	45 [a L D b L D c]	53 [a L D b L D c]	

Mark one L and one D in each bracket.

6 [a L D b L D c]	14 [a L D b L D c]	22 [a L D b L D c]	30 [a L D b L D c]	38 [a L D b L D c]	46 [a L D b L D c]	
7 [a L D b L D c]	15 [a L D b L D c]	23 [a L D b L D c]	31 [a L D b L D c]	39 [a L D b L D c]	47 [a L D b L D c]	
8 [a L D b L D c]	16 [a L D b L D c]	24 [a L D b L D c]	32 [a L D b L D c]	40 [a L D b L D c]	48 [a L D b L D c]	

PART II

Mark each picture L or D in Part II.

1	L D	7	L D	13	L D	19	L D	25	L D
2	L D	8	L D	14	L D	20	L D	26	L D
3	L D	9	L D	15	L D	21	L D	27	L D
4	L D	10	L D	16	L D	22	L D	28	L D
5	L D	11	L D	17	L D	23	L D	29	L D
6	L D	12	L D	18	L D	24	L D	30	L D

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ALTERNATE DIRECTIONS

PART I

Say: I am going to have you look at some pictures. All of these pictures are of men doing different jobs, men doing different kinds of work. I want to know which of these jobs you would like to do. I also want to find out which of these jobs you would not like to do. When you look at the pictures, do not think about how much money you would make by doing the job. Do not think about the schooling (school work) you would need to do the job. Just look carefully at the pictures and pick the job you would like to do most. Then look at the pictures again and pick out the job you would not like to do. This is not a test so there are no right or wrong answers. Do you have any questions about what we are going to do?

(Give examinee the Inventory booklet.)

Say: Now open your booklet. Here is row one. There are three pictures in row one. (Point to the pictures in row one.) There is also a little letter above each picture. These are a, b, c. Can you find the letters above each picture? Now look carefully at the pictures a, b, and c in row number one. Which of these jobs would you like most to do? (Point to the two remaining pictures and say:)

Which one of these jobs would you like to do least? Which one of these jobs would you not like to do? Now we are going to do the same thing for every row of pictures in the first part of this booklet. Are there any questions about what we are going to do?

(Proceed through all triads of Part I in the same manner used to elicit responses for number one.)

(Where the examinee indicates that none of the activities appeal to him, say:) In this case I want you to pick the job you dislike least, the job you would first choose to do. Now pick the job you dislike the most, the one you would choose last.

(Where the examinee indicates all the activities appeal to him, say:) Then which of these would you choose first to do? Which of these would you choose to do last?

PART II

Say: This part is a little bit different. See, each picture has a number. (Point to the number.) The number will tell you what picture I want you to look at. Now point to picture number one. Please tell me would you like to do this job, or would you not like to do this job? (Point to picture number two.) Now look carefully at picture number two. Tell me would you like to do this job

or would you not like to do this job?

(Follow the same procedure until all responses for Part II are elicited.

TABLE VI

CORRELATION OF COEFFICIENTS FOR COMPONENTS SUGGESTING CURVILINEARITY

Correlated Components	Special Class	Institution
Intelligence*-Esthetic	-.11	--
Intelligence*-Scientific	-.00	--
Natural*-Intelligence	.09	--
Business*-Intelligence	.24**	--
Chronological Age*-Computational	.15	--
Chronological Age*-Time Perspective	.03	--
Chronological Age*-Scientific	--	.03
Chronological Age*-Time Perspective	--	.00
Mechanical*-Chronological Age	--	.10
Business*-Chronological Age	--	.11

*Predictor = Scores transformed by means of formula given on page 55.

**Significant at the .05 level.